DOCUMENT RESUME

ED 326 220 IR 052 719

TITLE IFLA General Conference 1988. Division of Special Libraries. Section on Science and Technology Libraries; Section on Art Libraries; Section on Social Science Libraries; Section on Geography and Map Libraries; Division of Contributed Papers.

INSTITUTION International Federation of Library Associations, The Hague (Netherlands).

PUB DATE Sep 88

NOTE 211p.; Papers presented at the International Federation of Library Associations (IFLA) General Conference (54th, Sydney, Australia, August 30-September 3, 1988).

PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC09 Plus Postage.

DESCRIPTORS Academic Libraries; *Access to Information; Agriculture; Cataloging; Developed Nations; Developing Nations; Foreign Countries; Higher Education; Information Retrieval; *Information Technology; Library Automation; *Library Networks; *Library Role; *Library Science; Newspapers; Online Systems; School Libraries; *Special Libraries

IDENTIFIERS Research Libraries Group

ABSTRACT

The 23 papers in this collection include papers on special libraries and miscellaneous contributed papers: (1) "Networking Potentialities and Limitations--Special Library Networks in Socialist Countries--An Overview, and the Main Ways of Perestroika in the Work of Scientific and Technical Libraries at the Present Stage" (D. Schmidmaier & I. Eenmaa); (2) "Networking Potentialities and Limitations--Achievements, Potentialities and Limitations for Library Networking in Europe and North America" (R. Brown); (3) "Networking Potentialities and Limitations in Developing Countries" (C. Lupovici); (4) "The New Trend To Share the Research Materials and Information among National Art Museum Libraries in Japan" (T. Mizutani); (5) "The Art and Architecture Program Committee on the Research Libraries Group" (N. Allen); (6) "MEXICOARTE: A Database, Another Alternative To Study the Art of Mexico" (E. Blasquez); (7) "Automation and Academic Library Structures" (abbreviated version, M. Von Cotta-Schonberg); (8) "The Convergence of Management Attention upon Information: Lessons for Librarianship" (M. Broadbent, & M. Koenig); (9) "Promoting Maps to the Australian Public--Nationwide Map Week" (D. Prescott); (10) "Automated Map Retrieval" (P. Ochman); (11) "Will Your Library Be the Spatial Data Information Center of the Future?" (G. North); (12) "The Importance of Publications from Developing Countries and the Implications for Libraries in Industralized Countries" (E. Seusing); (13) "Supporting the Utility of Retrieval Results" (H. Millonig); (14) "Standards in Patent Office Publications--An Example for the Easier Acquiring of Technical-Scienfic Information" (E. Derday); (15) "Newspaper as a Tool in Educational Research in Nigeria" (L. Aina); (16) "Bibliographic Control of Literature in Research Disciplines in Kenya" (J. Otike); (17) "Literature Data Banks for Institutional Libraries: A Critical Comparison between Conventional Information Media and the Possibilities Offered by EDP-Supported Legal

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**54th IFLA**
**GENERAL CONFERENCE**
**SYDNEY, AUSTRALIA**
**30 AUGUST - 3 SEPTEMBER 1988**

ED326220

Division of Special Libraries

# SECTION — SCIENCE AND TECHNOLOGY LIBRARIES

*Session: 119 Thursday 1 September 1500 - 1730*

*Networking potentialities and limitations*
Special library networks in Socialist countries — an Overview, and the main ways of Perestroika in the work of scientific and technical libraries at the present stage.
*ENGLISH TEXT*
*(41-SCIE-1-E)*

Dieter Schmidmaier (Bergakademie) Freiberg, GDR) and
Ivi V. Eenmaa (Director of the Krentzwald State Library of the Estonian SSR)

*Networking potentialities and limitations*
Achievements, potentialities and limitations for library networking in Europe and North America *(42-SCIE-2-E)*

Rowland G. Brown, President, OCLC Online Computer Library Center, Dublin, Ohio, USA

*Networking potentialities and limitations* in developing countries
*(45-SCIE-3-E)*
*ENGLISH TEXT*

Christian Lupovici, Director of the Library Universite de Technologie de Compiegne, Compiegne, France

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Michael Von Cotta-Schonberg, Librarian of the Copenhagen Business Library

The convergence of management attention upon information: lessons for librarianship *(56-SOC-2-E)*

Marianne Broadbent, Head, Dept. of Information Services, Royal Melbourne Institute of Technology, Melbourne, Australia and
Michael Koenig, Dean, Graduate School of Library and Information Science, Rosary College, River Forest, Illinois, USA

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Dorothy F. Prescott, 44 Lucas Street, East Brighton, Vic. 3187, Australia

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Prue Lovell, Manager, The Age Information Service, Melbourne, Australia

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Peter Jacso, Head, Computer Science Information Center, Computer Applications and Services Company, Budapest, Hungary

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# NETWORKING POTENTIALITIES AND LIMITATIONS
## — Special Library Networks in Socialist Countries — an Overview

Dieter Schmidmaier *(Bergakademie Freiberg, GDR.)*

**ABSTRACT**

*Special library networks are co-operative associations of libraries with different conditions of subordination and nearly similar profile.*

*Preconditions of the establishment and effectiveness of such networks consist in efficient special libraries as well as in the willingness for co-operation.*

*The management of the network rests with the most efficient library.*

*The working results of some networks of technical scientific disciplines are presented.*

Numerous changes have occurred in librarianship in socialist countries during recent years. Among the concepts which are frequently referred to is that of 'special library network'. On the basis of numerous publications from the USSR, GDR, the People's Republic of Poland, the Czechoslovakian Socialist Republic, and the Hungarian People's Republic, I will try to list common features in terminology and common tasks of Science and Technology Libraries which exist in spite of numerous specific national features. Since the author is Director of the Central Library of Mining and Metallurgy and head of the national library network in the same field, it will be difficult to avoid a certain overemphasis of his own experience. No references have been included into this publication to avoid an excess amount of single pieces of information.

I.

1. The scientific-technological revolution and the international production and circulation of sources of information are strongly interrelated. In the present stage of the scientific-technological revolution, this relationship may be characterized by
   1.1. the constant increase of information sources both in terms of quality and quantity
   1.2. constant increase of prices of almost all categories of information sources
   1.3. constant increase of grey literature which is particularly important for science and technology
   1.4. the continuous occurrence of new sorts of information sources due to new technologies of information and communication (e.g., electronic journals, CD, video tapes)
   1.5. constant increase of databases and automated information retrieval systems
   1.6. increasing problems of access to scientific information due to information barriers.
2. All institutions in the fields of production, acquisition, cataloguing, distribution, supply, and storage of information sources have the duty to find and to practice the most efficient methods of access to information sources.

II.

1. The intensification of the economy of the socialist countries, together with an ambitious Science and Technology Programme of the Comecon, make quick but reliable cataloguing and good availability of international publications the main purpose of librarianship.
2. Numerous regulations on libraries, for instance those passed in the USSR and the DDR in 1984, support the process of information source availability. They describe library networks as one of the most efficient forms of cooperation and coordination in librarianship which are best suited to achieve the objectives named under I. and II.

III.

1. A library network is a form of organization of libraries of the same type, or the same function, in an area delimited in terms of either territory or specialty. — A special library network is a national organization of libraries with about the same specialties independent of the administrative structure and the subordination.
2. A library network serves an optimum literature supply in an extended or differentiated area by efficient local distribution of the bookstock. — A special library network serves improved literature and bibliographic information supply in a given specialty.
3. The activities and the purpose of a special library network are determined by certain criteria:
   3.1. The criterion of objectivity: a special library network can be formed only in case there are objective reasons which are in agreement with social demands. A special library network is no temporary solution, its formation cannot be decided on without existing demand. Modern information and communication technologies are only supporting aids and potentialities for the formation and efficient work of special library networks, they are no technological compulsion. Special library networks are but one form of librarians' coping with the increasing number and diversity of the demand for literature and information.
   3.2. The criterion of clearness, comprehensibility and delimitability: efficient operation of a special library network is possible only if it can be unambiguously delimited from other networks and specialties and if an overview can be kept in terms of organization.
   3.3. The criterion of qualified management and public accessibility: to keep in agreement with the definition of a library, certain minimum requirements must be fulfilled for the membership in a special library network, i.e. qualified management by an administrator competent in the field of librarianship, with the public character of the library remaining unchanged. The preconditions for the contact with the other network partners include a high professional level, the same education and profession, the same terminology, and the same strategy towards the user.

IV.

1. A special library network needs guidance. After examining all possibilities, a central special library has been established to be the best solution (there are examples of such libraries in many socialist countries, including the GDR, the USSR, and Poland).
2. The central special library is the centre for bookstock registration and scientific methodology. The special library network is formed under its guidance.
3. The activities and the purpose of a central special library are determined by certain criteria:
   3.1. a central special library must be sufficiently "large," i.e. it must have a sufficient technical, economical, and personal basis
   3.2. a central special library must be sufficiently well-known, i.e. it must have gained national and international recognition, and its staff must be sufficiently experienced
   3.3. a central special library must allow sufficient public accessibility, at least for all partners
   3.4. a central special library must have sufficient authority to solve problems outside the area of its own subordination.

V.

1. Legal problems play a dominant role in the setting-up of special library networks. These networks can be developed without disturbances only if their position, functions, and operation mode are fundamentally laid down in library legislation or similar governmental regulations. Any regulations on the enforcement of legislation concerning special library networks can be given only on this basis. Naturally, every special library network needs additional regulations of its own — first of all a cooperation agreement which contains the rights and duties of all member libraries, as well as internal regulations guaranteeing trouble-free acquisition, cataloguing, supply, and weeding of bookstocks.
2. The main point is the combination of library activities in the territory and in the specialty. Up to the moment, there are no general solutions for this problem. Thus, many regulations on networks were passed from a purely territorial viewpoint, with no adequate provision for the tasks of a library in special networks. This concerns inter-library loan, union catalogues, deposit copies, and archival activities of libraries.

VI.

1. The work on the basis of these regulations is carried out by the staff of the member libraries. To put it more simply: quick availability of information sources must be guaranteed by the special library network staff. This is a high demand to professional ethics, and thus the professional ethics of the staff, within the framework of legislation but by far exceeding it, become a decisive factor for the network's success.
2. The qualifications of the staff of the member libraries must be improved. Progress in the task of cooperation and coordination

of librarian work can be made only by determination, efforts, and skill. Sufficient skills become a prerequisite for the solution of all arising problems. All institutions of professional education in the field of librarianship must impart to their students some knowledge of special library networks. Specific information on the demands of the network in question will lie within the exclusive responsibility of the network itself which may use all possibilities for oral or written communication for this purpose.

3. The delimitation of the special field of a special library network is of decisive importance. The libraries may carry out their activities on this basis. Examples of such activities include:
   3.1. coordinated acquisition of information sources on the basis of binding rules of acquisition and weeding (here, an up-to-date legislation on deposit copies, and a national scheme of thematic collections are important preconditions)
   3.2. joint cataloguing of information sources within the framework of national union cataloguing, with special attention to information sources belonging within the special field of the network, and online cataloguing
   3.3. storage of information sources, with special attention to the role of the central special library as central archive, and to the cultivation of cultural heritage
   3.4. supply of information sources by internal interlending within the limits of the network
   3.5. internal network user education
   3.6. links to information retrieval systems and databases.

VII.

1. The above chapter VI gives some indication of the importance of the scientific activities of the central special library in the field of methodology. Its staff has not only the function of laying down and enforcing the legal regulations but must guarantee smooth relations between member libraries.
2. Chapters II to VI show my formulations to be ideal ones which are but extracts of a discussion of great diversity taking place in the socialist countries. Particularly legal and structural problems remain unsolved in many cases. Moreover, concepts of very large nations (USSR) cannot easily be applied to small countries (GDR) whereas the solutions of countries with similar structures (GDR, CSSR, Hungary) are identical in approach.
3. The efficiency of special library networks decisively depends on extensive application of modern information and communication technologies which are the only way to guarantee quick availability of the information sources stored in the networks. The concepts of various socialist countries differ greatly on this item.
4. In conclusion, I think I can state that special library networks are an important form of cooperation between libraries which closes a gap in specialized and interdisciplinary literature supply.

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41-SCIE-1B-E

## NETWORKING POTENTIALITIES AND LIMITATIONS
## — The Main Ways of Perestroika in the Work of Scientific and Technical Libraries at the Present Stage

Ivi V. Eenmaa *(Director of the Kreutzwald State Library of the Estonian SSR)*

**ABSTRACT**

*The tasks of universal (general) research libraries are the following:*

1. *To play the role of co-ordinating centres of branch libraries in forming, distributing and using library and bibliographic resources in a region and in undertaking the function of an intermediary between scientific and technical libraries, institutions of scientific and technical information and specialists.*
2. *To function as centres of bibliographical information and literary propaganda for workers of enterprises not included in the network of libraries and institutions of scientific and technical information.*
3. *To act as a universal basis of general self-education and professional reading for production workers.*

One of the prerequisites of advancing socio-economic development in a multinational country with a vast territory like the Soviet Union is an all-round intensification of production on the basis of scientific-technical progress. The work of our libraries is also subordinated to the state's strategy and tactics.

In the Soviet Union more than 100.000 state universal (general) research and public libraries are engaged in the service of scientists, specialists and workers in industry, agriculture, culture and education. About 116.000 scientific and technical libraries have been established at enterprises and organizations. The network of libraries of the Academy of Sciences of the USSR (and of the union republics) and higher educational establishments has been founded in order to provide the main research trends with information and library service.

Legal basis, general aims and tasks of all library systems are fixed in "Polozhenii o bibliotechnom dele" (Legal regulations of librarianship). It should immediately be pointed out that every network of libraries or even each concrete library has its own special tasks depending on the specific requests of different readers and a certain region. Today the contribution of libraries to scientific-technical progress finds its expression first of all in providing long-term complex programmes with information service, for example, the complex programme of scientific-technical progress of the member-states of the Council of Mutual Economic Assistance (CMEA) up to the year 2000, food problem, programmes of energetics, soil improvement, advancement of machine engineering, production of consumer goods, rearrangement of service system etc.

Undoubtedly, the leading role in information and bibliographic service of the above-mentioned long-term programmes rests upon scientific and technical and special libraries. The history of technical and special libraries indicates that the structure of the network of such libraries has developed and is developing synchronously with the system of organs of management in science and production. Today it can be said that such characteristic traits of the network of scientific and technical and special libraries as their maximum closeness to production and the possibility of serving a relatively stable composition of readers helps greatly to carry out this work.

Besides, the State Public Scientific and Technical Library (SPSTL) of the USSR, the central library of the network mentioned above, owns powerful automated databases containing at present about 300.000 bibliographic entries of Soviet literature. The annual growth of foreign books is up to 70.000 entries, but the annual growth of foreign periodicals is about 1000 entries. The data base concerning serial publications is being formed in the framework of International Automated System of Registration of Serial Publications of the member-states of the International Centre of Scientific-technical Information, which includes serial publications of the People's Republic of Bulgaria, People's Republic of Hungary, German Democratic Republic, Cuba, People's Republic of Mongolia, People's Republic of Poland, Socialist Republic of Romania, Socialist Republic of Czechoslovakia and the Union of Soviet Socialist Republics. Such a thorough information concerning the data bank of foreign literature is brought forward because readers' requests for this literature make up about 45 per cent of all requests.

Since 1987 the SPSTL of the USSR started to issue an all-union cumulative catalogue of native publications with a small circulation on natural sciences, technics, agriculture and medicine informing about current acquisitions in the stocks of different libraries of the country. At present 57 libraries are represented in the cumulative catalogue and the annual growth is 10.000 documents. The work concerning the usage of information from foreign networks of data banks is developing.

The databases mentioned are used not only by scientific and technical libraries, but by universal (general) research libraries of the Ministry of Culture, libraries of higher educational establishments, academic and agricultural and other libraries as well. To bring yet another example it can be said that between SPSTL of the USSR and the Kreutzwald State Library of the Estonian SSR there has been established telecommunication, which has considerably facilitated the work of our librarians and guarantees quicker and better service of readers.

Beside the fact that the character of readers' requests in contributing to scientific-technical progress is changing in the direction of greater specialization, concreteness and more complicated subject matter, an opposite tendency can be observed: the amount of interdisciplinary requests increases. It can be accounted for by the complex character of contemporary scientific problems.

Libraries began to feel this contradictory process. Not one, not even the biggest library can, under these conditions, keep the necessary balance between reader's requests and the content of its stocks. And it is not even indispensable in case there is co-operation between universal and special libraries.

Co-operation between libraries of different systems and depart-

ments has become a pressing necessity. Problems of co-operation, the establishment of joint regional and inter-regional reference information collections, organization of the system of information service concerning depository holdings, exchange stocks, interlibrary lending of documents and many others acquire the first-rate importance. On this condition the role of large universal (general) research libraries and in case of Soviet republics — the state libraries, functioning as national libraries — increases. Large universal (general) research libraries take the role of co-ordinating centres of branch libraries in forming, distributing and using the bibliographical and informational resources of a region. Universal (general) research library becomes an intermediary between scientific and technical libraries, institutions of scientific-technical information and specialists. The above-mentioned direction appears to be one of the leading directions in the work of the universal (general) research library. Ukraine, Byelorussia, Lithuania and Estonia have had certain positive experience in this field. The second in size universal (general) research library in the Soviet Union — the Saltykov-Shchedrin State Public Library leads information service of a territorial-departmental complex programme called "Intensification 90."

Undoubtedly, the role of the universal (general) research library is not limited with the functions of organizing and managing only. A long time ago the stocks of universal (general) research libraries ceased to be humanitarian by profile and technical and special literature makes up 30–40 per cent among overall lendings.

Another important direction in the work of the universal (general) research library in contribution to scientific—technical progress is the bibliographical and informational service of the workers of the enterprises without a library. The universal (general) research library provides priority service for these enterprises. With regard to limited library stocks, especially in small towns and in regions that have not long ago been taken into economic use (Siberia, Far East), a considerable part of specialists' and workers' requests, connected with their work, is still not satisfied. A research work, carried out by the Lenin State Library of the USSR together with republican libraries concerning bibliographical resources, has indicated that the greatest percentage of refusals due to the fact that "the publication is not in the stock" can be observed in such fields as technics (27,6 per cent) agriculture (29,7 per cent) and medicine (32,8 per cent). It once more confirms that a thorough rearrangement of library resources on inter-departmental base is needed.

Contemporary production is oriented on a progressively thinking worker and a specialist who is in good command of technological culture. Inquiries have revealed that more than 90 per cent of workers and engineer-technical personnel are studying to improve their qualifications and professional knowledge in one or another form. Out of this has grown the role of the universal (general) research library as a contributor to the system of life-long education, professional preparation of personnel, improvement of qualification and popularization of technological knowledge.

In conclusion, some words about a certain type of universal (general) research libraries, namely a national library.

I am convinced that the self-consciousness of man is formed within culture, partly within a national culture.

The mission of a national library is to preserve for the future generations:

1. The most valuable part of the world culture the lack of which makes the development of national culture impossible;
2. Everything about one's own nation and its culture, as nobody else in the world will do it.

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42-SCIE-2-E

## NETWORKING POTENTIALITIES AND LIMITATIONS

## Achievements, Potentialities and Limitations for Library Networking in Europe and North America

Rowland C. W. Brown, *President, OCLC Online Computer Library Center, Dublin, Ohio USA*

**ABSTRACT**

*This paper discusses the state of library networking (including benefits and expectations) in North America and Western Europe with a view toward the potential for global networking. It also sets the framework for movement beyond the successful networking focus on library technical services activities to reference services, improved access and full text delivery.*

When we speak of library networks, it is necessary to define one's terms. In this essay the definition includes library collaborations in a formalized sense, with or without electronic augmentation. It can vary from simple informal understandings among libraries to carry out interlibrary lending and other forms of resource sharing, to highly structured contractual arrangements regarding the exchange and flow of bibliographic information among the libraries involved.

The services or products may vary: printed bibliographies or COM catalogs, or online and distributed electronic databases. Library collaborative networks range from small consortia of a few libraries that share in one manner or another their respective online catalogs to highly structured, professionally staffed multi-service organizations involving hundreds or even thousands of members, nationally and internationally. They can be government-sponsored, membership-governed not-for-profit organizations, or commercial service organizations. Building on the electronic networks are other forms of formal collaborative library efforts such as the CONSER Program in the United States and Canada, or the U.S. Newspaper Program.

In North America and Western Europe, various types of networks have developed, and they may exist side by side. In both of these highly industrialized geographic areas with strong traditions of higher education and strong public libraries, library collaboration has flourished, and networks have proliferated.

Where a strong commitment to library cooperation and resource sharing existed prior to the adoption of technological systems for program implementation, the resultant electronically augmented networks are likely to be based upon stronger foundations and deeper commitments of the membership, and thus, are less likely to grow and wane with each new technological innovation or economic alternative.

While the objectives of many of today's networks in both North America and Western Europe grew from a desire to benefit from shared cataloging in order to save the heavy costs of this labor-intensive activity and reduce the delay in gaining access to the steadily growing volume of required materials, many of these have gone on to provide inter-library lending and other cooperative programs. Attention quickly turned to retrospective conversion efforts as more and more libraries automated their catalogs. The larger organizations with sufficient resources and staffing are indeed expanding into a wide range of collaboratively supported information access and document delivery services.

The constraints of this brief essay do not permit even superficial specific identification and explanation of the rich array of networking arrangements currently operating or under study in these two principal geographic areas of library networking—North America and Western Europe.

In the United States during the 1970s, sometimes called "the Golden Age of Library Collaboration," the Online Computer Library Center (OCLC), the Research Libraries Group (RLG), and the Western Library Network (WLN) developed concurrently. OCLC quickly went from an Ohio-based academic library network to a national network serving all types of libraries and eventually to its current international dimensions. RLG, remaining steadfastly committed to ownership by the university research libraries, added special associate members and provided its RLIN database services to CLASS members, an essentially California-based library consortia. WLN was established by the state of Washington to serve all types of libraries and broadened its coverage to a multi-state activity, essentially in the northwest part of the United States and Alaska. Despite their significant differences in size, mission and governance structure, the basic bibliographic processing services of these three organizations are quite similar. The scope and breadth of these services today vary primarily as a result of the significant differences in the size of the membership and the resources available.

While other pre-existing regional and state library networks contemplated the idea of replicating OCLC, they became and remain affiliated networks with OCLC, offering OCLC services to their library members. In addition, they offer a range of library related services on their own. The gradual significant overlap of research library memberships in both OCLC and RLG, and the common needs shared among the members of the research library community has led to a gradual increase in record exchange, collaborative efforts and adoption of common standards building activities between OCLC and RLG. In the same vein the Library of Congress, OCLC, RLG and WLN jointly developed a Linked Systems Protocol to support a significant agenda of cooperative bibliographic tasks.

Indeed, the linkage among the networks and among the libraries themselves that is eventually envisioned for the application of LSP could revolutionize library networking in the United States and possibly elsewhere.

Today, RLG has 36 owner members, 12 associate members, and more than 40 special members. WLN reports 300 cataloging members in their six-state regional area, largely concentrated in the northwest United States and Alaska. OCLC has more than 4,000 full cataloging and tapeloading members in the United States alone, with more than 8,000 libraries having access to the database indirectly or access to the interlibrary lending activities through Group Access Capability (GAC) and affiliated state systems.

Both RLG and OCLC carry out significant programmatic activities and have pioneered in non-Roman alphabet software programs to include vernacular cataloging. OCLC maintains a multi-million dollar research program in library and information science on behalf of its membership. RLG has pioneered its Conspectus as well as development of special databases in certain areas of scholarship. Both networks are moving rapidly toward reference services, document delivery and full-text access services.

The United States and Canada which saw much of the networking initiated by the academic library community, have witnessed in recent years the rapidly growing phenomena of state and provincial networking to meet resource sharing objectives for public libraries and other smaller libraries within the region not met by the larger national organizations. Fortunately, many of these state networks have been able to work out mutually satisfactory relationships with the national networks that build upon and serve both national and regional interests, thus avoiding the disintegration of a de facto national bibliographic database and resource-sharing structure.

While there are many similarities in network development in the United States and Canada, there are several differences that deserve to be noted. First, while the United States has growing non-English populations, Canada, by law, has become a bilingual society, and library systems and networking reflect the English and French speaking duality. Like its counterparts in the United States, the Canadian-based network, UTLAS, was spawned by research university libraries, particularly the University of Toronto. Like OCLC, it became a national and to some extent, a multi-national institution serving all types of libraries, and it continues to draw much of its strength from its university roots, even though it has been transformed into a commercial for-profit institution and operates as a unit of the large International Thomson enterprise, with offices in both Canada and the United States. OCLC, like UTLAS' limited activities in the United States, has a small but growing membership in Canada, principally among universities.

Another difference is the role of the National Library of Canada (NLC). In fulfillment of its mandate to facilitate access to Canada's library and information resources, NLC, in addition to producing Books Canada which is loaded in such databases as OCLC and UTLAS, is committed to the development and support of nationwide and centralized networking. NLC's networking strategy, based upon International Standards Open Systems Interconnection (OSI), uses the latest telecommunications technology in its design to permit participants to share resources and exchange information, using dissimilar systems while maintaining local autonomy and respecting local requirements.

Now let us turn, by necessity, all too briefly to the wide ranging library networking activities and plans in Western Europe. Here again a number of countries have had a long-standing tradition of networking in both the collaborative and technological sense. These would include the United Kingdom, Ireland, the Netherlands, Switzerland, Denmark, Sweden and Norway. More recently, networking has been implemented, or at least is in the planning stages, in most of the remainder of Western Europe. In some cases, as we shall see, these efforts have been facilitated by the national library or by government ministries in a top-down approach. In other cases, it is developed by consortia of major academic and/or public libraries. Frequently in these countries more than one network exists side by side or in competition with one another. In this environment, as we shall see, OCLC is operating both independently with member libraries in those countries as well as in concert with or as an integral part of various national networks.

The United Kingdom and the Republic of Ireland undoubtedly represent the most complex array of networking activities in Europe, which include the regional networks and national networks supported by The British Library itself. In the midst of all of this, OCLC has both individual library memberships primarily representing academic libraries and collaborative relationships with some of these networks. The OCLC database acts as a secondary database for The British Library. RLG has also established collaborative programmatic relations with The British Library.

Turning to the continent, we have an established national network in place in the Netherlands with the Dutch Library Cooperative of the Royal and University Libraries (PICA), serving both academic and public libraries and operating through a mutual exchange of records agreement with OCLC.

In Belgium and Switzerland, separate networks have either been established or are under development which serve the different officially supported language constituencies of those nations.

In Sweden and Denmark, we see separate networks serving the academic and the public library constituencies with the Royal or National Library playing an important role in the academic library network, as they do in Norway.

In France, the situation is varied, complex and still developing. The Ministry of Education (DBMIST) and the Ministry of Culture (DLL) have the responsibility for academic libraries and public/national libraries respectively. DBMIST has adopted the OCLC system to provide shared cataloging services to the academic libraries, while developing a national union catalog in the process. These institutions will become full members to go online with OCLC over a several year period. In parallel, DBMIST is implementing a national system and network to facilitate resource sharing (PANCAT). The MARC Format and Anglo American Cataloging Rules (AACR2) are used.

The Federal Republic of Germany poses special issues. Because of its federal structure and the historical development of library collaboration, networking development has been centered within each state. The state systems serve the university and research libraries within their respective areas. The seven state centers maintain statewide networks and union databases. Development has been uncoordinated and there is minimal inter-networking.

Networking in southern Europe is less developed, perhaps reflecting a less active tradition of national library cooperation and resource sharing. Currently there are no formal national or provincial networks in Spain serving academic or public libraries. A consortium of academic and public libraries has recently been formed in the province of Catalonia, based at the University of Barcelona, with the intentions of developing a network and database. The system will be MARC Format-based.

It is interesting to note, however, that considerable library automation planning is underway in Spain. This suggests networking will increase in this country as more machine-readable databases come into existence, retrospective conversion increases and opportunities for resource sharing and multi-institution access are sought.

In Portugal, national, academic and public libraries are the responsibility of the Ministry of Culture. The national library has a legislative mandate to develop a national network and union database to serve all the libraries of Portugal. The system will be MARC Format-based (UNIMARC).

In Italy, we see a somewhat fragmented environment. In the north, a number of regional systems and networks are established, such as that serving the libraries of Tuscany and based in Florence. Two long established national libraries exist, one in Florence and one in Rome, but neither maintains a national network.

One cannot leave Western Europe without a note on the efforts of the European community. The Commission of the European Communities, through its DG XIII, actively plans to stimulate library cooperation in Europe. Two "action lines" which they intend to pursue and fund are:

1) National programs for the retrospective conversion of catalogs.
2) Stimulation of internetworking and fostering of consortia.

A postscript to the Western European scene: In addition to these essentially local or national efforts, networks like RLG, UTLAS and OCLC have explored and established various roles there. RLG has established some significant programmatic activities with the British Library and an online link exists between the two. UTLAS has furnished retrospective conversion services in the area. OCLC, in its avowed mission of becoming an international network and a network of networks, is working actively with most of the agencies mentioned in this report, having not only individual member libraries in most of these countries participating in OCLC in increasing numbers, but also interfacing with or complementing existing or developing networks. In a new form of international networking, OCLC is a conduit or facility through which national and European-wide resource sharing and internetworking may be achieved. OCLC shares a common ambition with the Commission of the European Communities to achieve the "action lines" previously defined, not simply to enrich the common resource for Europe, but also for the global library community.

With this rapid review of networking activities on several continents, it is readily apparent that local and national networking in all its classical forms is moving rapidly forward aided by technology

and limited primarily by economics and political realities in collaboration of leadership. A growing awareness of the need to overcome the barriers of different cataloging rules, communication protocols, and language are being increasingly recognized and dealt with. Similarly, the dream of access to international bibliographic database shared cataloging on a global basis to save costs in international resource sharing in the face of finite resources is gaining momentum. Likewise are the efforts to approach preservation on a global scale. Indeed, these activities have been one of OCLC's most successful initiatives in recent years.

But, much more needs to be done in the area of cooperative protocol and standards. OCLC, RLG and WLN have developed the Linked Systems Project in the United States, and we are all committed to migrating this to a universally developed OSI/ISO standard. Europe is committed to an OSI standard. Similarly, the National Library of Canada has been working with a number of organizations to create a uniform messaging protocol for bibliographic application. Concentrating on the application level of the OSI Reference Model, NLC is concentrating their attention on interlibrary loan applications.

The Library of Congress, aside from its important leadership in authoritative cataloging, standards development and maintenance, and distribution of MARC records, has played an important role in the development of conversion software from the various national and international MARC formats to the LC MARC formats. This, in turn, has enabled organizations like OCLC to maintain in its database national catalogs of many countries and make them accessible to its own membership. Conversion of OCLC's records into locally usable formats, however, needs further attention in order to facilitate international networks.

With the increasingly predominant role of the English language in international networking and the use of information technology, language is becoming less a problem as time goes by for international networking.

But, the most profound changes for library networking in the future, I believe, will come from three broad developments. The first is the growth in power, application and use of microprocessors or desktop workstations, combined with rapidly increasing use of high density and volume optical or other storage devices which will create new challenges in forms of networking. Another is the increasing availability of digital fibre-optic and satellite international data exchange, which will facilitate international exchange of not only bibliographic records but document and other forms of full-text delivery. Lastly, but by no means the least important, as library and information systems become increasingly accessible to the public — the library user, scholar, researcher, educator and others — these users will increasingly dictate the form, content, structure and limits of both national and international library and scholarly networking. We have just begun the journey.

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45-SCIE-3-E

# NETWORKING POTENTIALITIES AND LIMITATIONS
## In developing countries

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**ABSTRACT**

*Developing countries don't have enough resources to set up themselves a library network. They have neither technological infrastructure nor adequate training. Nevertheless a library network is the only type of organization able to harmonize acquisitions and to save a significant amount of money. So they do need help from wealthy countries to get funds and technical support for a long term national program. But setting up networks in developing countries requires the observance of some elementary rules to carry it out, if one wants to succeed.*

*The first rule is to find specific means to get a networking process in a manual way, but able to prepare automated procedures which will come afterwards.*

*The second rule is to avoid the dispersion of standards to prevent any limitation in networking.*

Developing countries will not avoid to make their own experience, but we can hope they will avoid the errors made in wealthy countries.

### 1. FOREWORD

When Dennis Shaw asked me if I could give a paper on networking in developing countries, I thought I was certainly not the most qualified person to report on this matter. But I decided to accept the proposition because I believe it is interesting listening to the point of view of a French librarian who has some experience in this field. In fact, more than my own experience in negotiating cooperative-action programmes with developing countries, the outlook on libraries in developing countries which France has drawn from its relationship of cooperation with overseas countries in South-East Asia, Latin America and Africa is also of interest. At least France is very closely linked to several developing countries and has many of their characteristics, even though France is definitively rated as a wealthy country.

### 2. INTRODUCTION

In developed countries, the notion of a network implies the existence of a technical infrastructure and particularly a physical telecommunication network. But that is just what is lacking in developing countries. However, libraries in developing countries do need networking because their major problem is how to save money by sharing common resources. But networking demands substantial investment, specific training and organising, even if the network does not use either computer or telecommunication facilities. In the technical and economic general context of developing countries, governments are constrained either to do nothing, or to set up a national library network without, for the present time, any physical network support. In fact, developing countries can be divided into two categories:

i) Those in which there are not enough resources to set up a programme for cooperation. For this category, acquisition of library material is the absolute priority. Most of the African countries, except maybe Senegal and the Ivory Coast, belong to this category, though projects for Pan-African networks are proposed from time to time.

ii) Those in which sufficient resources can be found and which are able to prepare library networking projects with foreign support. This is the situation in North Africa and most of the Latin American countries.

### 3. LACK OF LIBRARY MATERIAL

The first thing one can note in developing countries is that there exists an important status both for libraries and documentation, which means a cultural recognition, and an evident lack of recurrent funds and material. The importance of libraries is reinforced by the scarceness of library material in the country. As a matter of fact, the publishing market is very restricted; national publishing is almost non-existent. Furthermore, the purchasing of foreign documentation brings two supplementary problems:

i) It is badly advertised and the sources and availability are not well known.

ii) Transactions must be paid in foreign currency which is very difficult to obtain since governments exercise strict control over the supply of harder currencies.

So librarians purchase foreign material, when they can do so, to the amount of their credit authorisation which is very limited. They look also for gifts from wealthy countries. In those circumstances, no coherent acquisition policy can be made. Then it may be asked whether it is necessary to set up a library network. For my part, I would answer that, for some cases, it is not necessary but for most of them it is absolutely necessary.

### 4. NETWORKING NECESSITY

Surely the concept of network is the most pertinent in developing countries. Just because resources are limited and acquisitions do not follow a clear policy, it is important to gather information and share the whole national resources. African supra-national cooperation projects present too many problems to have any chance of being actually realised.

Obviously the creation of a library network allows one to take advantage of the existing documentation resources with a higher degree of efficiency and brings the possibility of economising on acquisitions and on human resources. It is important, at national level, to be sure that for regular acquisitions duplication and serious lacunae will mostly be avoided. The idea of setting up one or more union catalogues forces itself upon one. But there still exists the problem of a clash between the different views on how to do it, the perception of developing country librarians on one hand, and the developed country experts on the other hand. There is a problem of adapting the processes to the developing country procedures and this is difficult for anyone. In fact, developing country librarians do not always appreciate the magnitude of the gap which exists between their own context and those of developed countries where

new technologies are quite widely used. For their part, experts have a natural tendency to propose the adoption of whatever procedures there are in their own country and which is not necessarily suited to the new context.

When a country nevertheless decides to launch a library networking programme, then the real problems arise and the more difficult ones are how to start networking and for what functions?

## 5. ADMINISTRATION STRUCTURES AND POLITICAL CONTEXT

In developing countries, as in Europe, most libraries belong to the public sector. They belong generally to the Ministry of Education or Culture. Thus it is quite easy to organise from the outset a coherent network at national level, when politicians, in the appropriate Ministry, understand that the only way to improve the position is to consider library material as a unique national heritage. To achieve this, they must adopt a national cooperation policy and a logical network between the separate entities has to be created. The library community is not usually prepared for this.

Before starting, three political factors have to be taken into account:

i) The carrying out of a networking policy requires a not inconsiderable investment for equipment (even if the network is not itself automated) and for staffing. This requires recurrent funding. For this reason, the political will has to be visible and its support has to be maintained for several years.

ii) Technical and financial support from a wealthy country is absolutely necessary and has to be maintained over several years. The creation of a network has also to take place within the framework of a cooperation programme negotiated between administrations with an agreed programme of objectives and sources of funding and an acceptable timetable.

iii) The negotiation period is not negligible; it is best to negotiate just after a general election, but in any case never before one.

## 6. ORGANISATION OF NATIONAL CENTRALISED NETWORKS

Setting up a library in such a context is not the most difficult thing but it is necessary to pay great attention to project definition and to preparing the associated inventory of actions. Problems to be solved fall into three categories:

i) Alternative solutions have to be found to replace lack of a technological infrastructure.

ii) Training sessions have to be set up in order not to hold up the introduction of new working methods.

iii) The library network has to fit into the framework of an international cooperation programme.

### 6.1 To find temporary and alternative technical solutions

The lack of technical resources require alternative solutions to be formulated which bring together experts to consider the fundamental nature of networking. Very soon it will be apparent that the acquisition of a computer is not a real problem; universities are often equipped by vendors themselves. But the lack of adequate control of those tools prevents their profitable use.

The lack of a physical network does not prevent the organising of working procedures as would be the case for a computerized network. On the contrary, when libraries are going to work together it is necessary to plan very precisely the relationships which are to be established between them. Also, it is important to analyse carefully the whole process in order that the working plan might be coherent and clear. It must be done in such a manner that today's manual procedures may be computerized later. One error to be avoided is the systematic copying of operational methods in developed countries.

This problem can be found in countries in Southern Europe where the level of acquisition is far too low to allow the adoption of North American collection development policies; for them, a tool like CONSPECTUS needs to be created ab initio.

6.1.1. We must start with those applications which are best adapted to the networking procedures. In countries where no telecommunication network exists and where professional training is deficient, information gathering has to be organised in a simple way with a hierarchical system, in which the control of information flow is focused on mandatory transfer procedures with a strong authority at the top of the pyramid. In a network, the work has to be organised with both centralised quality control procedures and decentralised information gathering. The advantage of such a network is that it allows manual information flow, and input in machine-readable form may be added as a later step. Information and training procedures have to be set up at the same time. Then local information becomes dependent on the network. Machine-readable data input may be managed in a union catalogue held on a database at a national, or foreign, computer centre. Local catalogues will just be by-products extracted from the national database. They may be published in different media, in hard-copy, microfiche or, in the near future, in CD-ROM which is a technology well suited for information retrieval in developing countries.

These considerations bring me to define a network in which different layers are well identified and have a legal existence distinct from the library into which they are put.

Practically, and for various reasons, union catalogues of serials are usually the first applications to be set up as a library network, monographs follow at the second stage.

6.1.2. A diversity of usage and standards must be avoided if communication capability is to be assured. Choice of de facto standards, namely the agreed practices adopted by the majority of the international community, is fundamental. Developing countries cannot afford to err in this matter. But the most serious fault is the practice of those libraries and documentation centres which have a computer centre and try to adapt their own applications software and data format. There are, in fact, three identifiable categories:

i) Libraries using home made software which represents the majority;

ii) Libraries working with Minisis (UNESCO software), essentially in Africa;

iii) Three or four South American libraries using NOTIS (American software running on IBM).

Harmonizing such format and cataloguing rules does not seem to be realistic. When it is possible to avoid diversity within a country, a great step has been reached towards achieving satisfactory networking. This is so because, even though heterogeneous computer systems will be able to communicate with each other in the OSI model, incompatibilities generated in the creation process and the data structure will remain unresolved and so libraries will remain isolated.

### 6.2 To create a new librarianship culture in developing countries

One of the common characteristics in most of the libraries in developing countries is the lack of sufficient primary and continuing librarianship education. But modernising libraries and adopting new working methods will not succeed if the responsible librarians are not both technically trained to use the tools and educated to understand the justification of choices made from the various techniques used in documentation.

### 6.3 A means to involve library directors and staff in a comprehensive motivating programme

Of course the decision of politicians to adopt a programme for change is not enough to set it up. Staff must be persuaded and implicated; and the directors of libraries involved must be the first — which is not always the easiest task. Two complementary operations must be carried out.

i) Having long discussions with them and taking them to visit institutions in other countries' networks with which they already have relations or have heard about.

ii) Organising specific training sessions and debating workshops for each different staff category within local existing training structures.

A realistic primary and continuing education programme must go with specific training for new applications. We have to show library staff as well as managers the coherence and logic between local actions and the whole system.

### 6.4 To establish library cooperation networking within the context of international cooperation programmes

Developing countries willing to modernise library management cannot do it themselves. They need advice and assistance. They also need substantial financial support for several years. The setting up of a library network is subordinated to existing international cooperation agreements. Those agreements can be only bilateral between two countries having common interests, but they can also be supported by UNESCO or IFLA. But, means for continuation must be taken into account from the beginning. The few instances I know of attempts to introduce new information technologies in developing countries have failed through lack of continuous support.

## 7. CONCLUSION

Developing countries are in a crucial situation for decision as to whether or not to implement networking. But networking at national level is mainly wanted by political authorities to be able to discover what exists (in terms of availability of documents) and to use tools

to help in taking decisions on national acquisitions and funding policy.

If there are numerous objections to library networking, the benefits will be harder to realise. Cooperation within developing countries will only have a chance to succeed if technical solutions are simple and effective. Developing countries will not avoid technical culture assimilation (as found in developed countries) but they can benefit from our experience to avoid making the same mistakes.

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*047-ART-1-E*

# THE NEW TREND TO SHARE THE RESEARCH MATERIALS AND INFORMATION AMONG NATIONAL ART MUSEUM LIBRARIES IN JAPAN

Takeshi Mizutani, *Librarian, The National Museum of Modern Art, Tokyo*

**ABSTRACT**

*The introduction of computers has greatly advanced in the 1980s in the humanistic disciplines in Japan, and they are now used diversely in art history too. For two years from 1986 to 1987, nine national institutions under the Agency for Cultural Affairs—seven museums and two research institutions—worked together and discussed how to proceed with the development of an information network system among the national museums. The new trend represented by this project has made us aware that a vast amount of information surrounds art institutions and art scholars and that it has qualities specific to the area, and we now feel the need to revise the concept of the art museum library and to build the environment requisite in realizing the sharing of research materials and information.*

## 1. Prof. Yukio Yashiro and the Founding of the Institute of Art Research

The first person in Japan to conceptualize the art library and to actually build facilities for that purpose was Prof. Yukio Yashiro (1890–1975) who was first known internationally for his study on Botticelli and later contributed greatly to the study of the history of Japanese art. He was the first director of the Institute of Art Research attached to the Teikoku Bijutsuin (Imperial Art Academy), which was established in 1930 and is the parent body of the present Tokyo National Research Institute of Cultural Properties. Inspired by the library of photographs of art works in London built by Sir Robert Witt (presently in the Courtauld Institute of Art) and by the Frick Art Reference Library in New York, he embarked upon creating what he called "the Catalogue Raisonne of Eastern Art" (a vast and systematized collection of photographs and documents on Eastern and Japanese art). His scheme was not realized successfully, and it was interrupted by the war. Yet, through the revisions of the organizations in the postwar era, his aim was carried on. I would like to consider the founding of the Institute of Art Research the starting point in the history of art libraries in Japan and survey how they stand now after half a century including the new trend among them.

## 2. The New Trend among National Institutions Related to Art

The three problems Mr. Itsuo Okubo pointed out in his presentation "Problems in Art History Documentation in Japan" in the IFLA Conference in Manila, 1980, have not been resolved. They are: (1) lack of cooperation among institutions dealing in art history research and information; (2) immaturity of the concept of the art librarian and difficulty of achieving cooperation between art librarians and art history scholars and museum curators; (3) delay in the development of the information system that can handle, in an integrated form, both the information on art works (including image information) and the documents. But in recent years these problems are tackled and the clues to the answers found, not by the art librarians, but by the efforts of the art history scholars and museum curators who need to finish their individual projects or improve the situation for the benefit of the organizations they work for. This new phase was enabled by the introduction of microcomputers, which were at last both powerful and affordable, into the field of art history research. 1977 saw the appearance of the first model of Japanese word processor, which must handle Kanji characters which are far larger in number and far more complex than alphabets; the standard model of the domestic 16-bit microcomputer was released in 1982; and a Japanese word-processing software and a database software for the standard model that can handle Japanese were introduced in the following year. When the art history scholars acquired the environment where they could use computers that could handle Kanji and yet were affordable and easy to use, they rediscovered that a bulk of information was there to be processed and that it had qualities specific to the area. This made them realize that they were far behind their peers in other countries in the development of information systems that could handle information from storage to retrieval, both for individuals and for organizations, and as the result, Yashiro's scheme and the problems he faced became important again after half a century.

For the two years' duration from 1986 to 1987, nine national institutions under the Agency for Cultural Affairs — the National Museums in Tokyo, Kyoto, and Nara; the National Museums of Modern Art in Tokyo and Kyoto; the National Museum of Western Art; The National Museum of Art, Osaka; and the National Research Institutes of Cultural Properties in Tokyo and Nara — worked together to carry out the "Research on the Provision of an Information Network System for Research Materials and Information at the National Museums." As reported by the Agency and the Tokyo National Museum several times, this was the first time the persons in charge of the management of research materials and information at the nine institutions met for a discussion and also microcomputers were installed at all of the nine institutions.

Though computer is only a tool for data-processing, the group of phenomena that are made possible by its introduction, including the revision and systematization of the procedure that was formerly built on experience and tradition and the schematization of the stages from the genesis of information to the preparation to make it available as well as the standardization of the description and the structure of data and the resulting compatibility and sharing of information, have come to be much discussed, from around the time of the above two-year research, not only in the field of art history research but also in all areas of humanistic disciplines.

## 3. Art History Research and Library and Information Science

For three years from 1985, the "Research on the Databases to Support Eastern Studies," centering on introduction of computers in various areas of humanistic disciplines and development of databases in each area in particular, was undertaken with the cooperation of scholars in many fields including history, literature, archaeology, ethnology, folk lore, art, etc. The Society of Franco-Japanese Art held a symposium titled "Art History and Information Science" in October 1986, and in July 1987 the annual meeting of the Eastern Branch of the Society of Art History chose "Art Historical Researches and Computer" as the theme for discussion. It should be noted that at the symposium held by the Society of Franco-Japanese Art there was a presentation on "the thesaurus in the field of art" made from the viewpoint of library and information science. The symposium itself was notable for its nature as a cooperative project with library science, and was probably the first attempt in Japan to bring together art history and library and information science. While at the symposium there were disagreements between the art history scholars who considered computerized data-processing as a means to answer specific needs arising in the actual cases in art history research and the librarians who saw things from the broader viewpoint of library systems and tried to apply the achievements in library and information science to the field of art history, it seems necessary and also important to promote the exchange of information and the cooperation between the two groups even more in the coming years.

## 4. Conclusion

The advancement in microcomputers and the changes that followed have produced in just ten years a situation that would have been wholly unimaginable before the revolution. The computers are now influencing the world of art that seemed farthest from technology, and while they are proving a useful tool, they also are causing much confusion. We do not know at the moment what will be the results of their introduction into the art libraries in Japan which still have much to be hoped for in terms of facility and staffing. But I would like to believe that the interrelated new trends I discussed above mark a significant milestone in furnishing satisfactory facility and staff to the Japanese art libraries and realizing the sharing of research materials and information including that with the public in the Japanese art institutions that deal in the accumulation of information in the field of art.

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048-ART-2-E

# THE ART AND ARCHITECTURE PROGRAM COMMITTEE OF THE RESEARCH LIBRARIES GROUP

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**ABSTRACT**

*By the late 1970's many of the full members of the Research Libraries Group (RLG) were academic institutions with major art libraries. The possibilities of special membership afforded museum libraries the opportunity to contribute to the database as well. In 1979 the Art and Architecture Program Committee of RLG was formed and charged with advising the president of RLG on special requirements of art and architecture and the information needs of scholars and professionals in the field. Through its accomplishments in supporting cooperation among art librarians and launching art documentation projects the AAPC serves as an interesting model for art librarians networking on a national and international basis.*

**HISTORY**

In 1974 four institutions with world class libraries, Harvard, Yale and Columbia universities and New York Public Library, formed a non-profit corporation called The Research Libraries Group, Inc. (RLG). An early objective was to create a computerized bibliographic utility which would improve the efficiency of library operations and to provide better access to information than the standard manual card catalog.

The strength of the art and architecture collections represented by the owner-member institutions of RLG was a powerful lure to the art museum libraries considering automation in the late 1970's. Early to join as special members were the Art Institute of Chicago, Cleveland Museum of Art, Metropolitan Museum of Art, and the Museum of Fine Arts, Boston. By 1979 the president of RLG established the Art and Architecture Program Committee (AAPC). The group was charged with advising the Board of Governors about the special requirements of art and architecture within the principle programs of RLG and with identifying projects which would address the specific information needs of art and architectural historians, architects, and curators. Today the AAPC is comprised of one representative of each of the 45 owner-member, associate, and special members with art and architecture collections.

One important achievement of this cooperative venture has been its success in changing highly restrictive interlibrary loan policies; today 38 of the AAPC's 45 members loan materials.

**SHARED CATALOGING**

In 1983 the AAPC embarked on a shared cataloging project for monographic series. Forty-three titles were selected and divided among willing AAPC members. A renewed commitment to the program was made in 1987 when the number of series covered rose to seventy-four with over half the AAPC libraries participating.

A cooperative approach to the bibliographic control of exhibition catalogs has long been a topic of discussion among art librarians in general and members of the AAPC in particular. In 1986 an Exhibition Catalog Task Force was established to examine the problem, and by Fall of 1987 over three-quarters of the members committed their institutions to selecting a discretionary number of museums, acquiring all their catalogs, and providing full cataloging for those of thirty-two or more pages. Currently the Task Force is developing a means for monitoring the program, evaluating its success, and, if warranted, planning its expansion to cover additional American and foreign museums and, perhaps, exhibition catalogs of commercial galleries.

**PRESERVATION**

An Art Serials Preservation Project is underway in which approximately 150 nineteenth and twentieth century art periodical titles have been identified which are in brittle condition and candidates for a microfilming preservation project. In the Spring of 1988 a survey of AAPC libraries was conducted to determine the holdings and condition of titles under consideration. Working with staff from RLG the AAPC expects to prepare cost estimates, raise funds, and implement a project to microfilm these endangered journals utilizing the collective holdings of participating members of the AAPC. It is hoped that this will the be first of an on-going AAPC sponsored preservation effort.

**RETROSPECTIVE CONVERSION**

The RLIN database is rich in records dating from the mid-1970's to the present, but for research in the field of art, it is, of course, the retrospective holdings of libraries that must be made available to students and scholars. In 1984 a J. Paul Getty Trust funded, three year project was launched to encourage retrospective conversion of art materials. As administrator of the grant, RLG was able to select projects which provided a broad and balanced coverage of the field of art.

**SPECIAL DATABASES**

**On-line Avery Index to Architectural Periodicals**

The Avery Index is an on-line file of approximately 52,000 analytic entries to over 500 periodicals in Western languages on architectural design and history received at the Avery Architectural and Fine Arts Library of Columbia University in New York City. A cross-reference file of all established Avery headings contains over 24,782 records and facilitates retrieval of information from the index. The Avery Index has been an operating unit of the J. Paul Getty Trust since 1964.

**Sales Catalog Index Project Input On-line (SCIPIO)**

The Sales Catalog Index Project Input On-line (SCIPIO) was initiated in 1980 by three AAPC libraries with funding from the Samuel H. Kress Foundation to provide rapid bibliographic access to auction records. The three AAPC founding members of SCIPIO, The Art Institute of Chicago, The Cleveland Museum of Art, and The Metropolitan Museum of Art, were joined by The Getty Center for the History of Art and the Humanities in 1983. Close to 90,000 records for publications dating from the eighteenth century to the present are presently available in the database.

**Art and Architecture Thesaurus (AAT)**

The purpose of the Art and Architecture Thesaurus is to provide a standardized vocabulary of art and architecture terms for use in bibliographic and visual databases and in the inventorying of object collections. An operating unit of the J. Paul Getty Trust since 1983, the thesaurus lists terms in hierarchies showing synonymous, hierarchical, and other relationships and in alphabetical indexes. The AAPC endorsed the AAT several years ago opening discussion

about the use of this controlled vocabulary as an alternative to Library of Congress Subject Headings in bibliographic records. Negotiations with RLG and the J. Paul Getty Trust about mounting the Thesaurus as an RLIN special database are underway. Members of the AAPC have been exploring methods of stringing AAT terms together to form subject headings which could be used in MARC records and will prepare an applications protocol to serve as a guideline for the use of AAT in RLIN.

**CONCLUSION**

The AAPC might be considered a model for cooperation among art libraries. Its success has been due largely to the strength of the Research Libraries Group itself.

Although only forty-five libraries participate in the Art and Architecture Program Committee, access to the RLIN bibliographic and special databases is available throughout the world for libraries contracting with the non-profit membership organization, the Co-operative Library Agency for Systems and Services (CLASS).

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*55-SOC-1-E*

# AUTOMATION AND ACADEMIC LIBRARY STRUCTURE (abbreviated version)

Michael von Cotta-Schönberg

## 1. INTRODUCTION

### 1.1 The challenge of automation

Once upon a time librarians were hotly debating whether computers had any place in libraries, just as they discussed — in the beginning of the century — whether typewriters had. Today it is evident that computers are here to stay. Moreover, the library community as a whole is beginning to realize that apart from the immediate practical advantages, computers and information technology in general are the tools of a new information era, just like the printing machine with movable types was the tool of an information era which started with Gutenberg and lasted until the middle of this century.

For libraries to make optimal use of automation a number of conditions must be fulfilled: basic are, of course, a profound understanding of the new tool and a fresh look at what the information process is all about — it does not seem to be about books, after all, even if books may always be there. Among the other conditions is a restructuring of our institutions to make a better framework for an information service which fully exploits the potential of the new information technology.

M. E. Porter says that "if new technology is introduced into firms which do not adopt new structures, then the cost of implementation may be high and the potential benefits diminished." This applies to libraries, too.

### 1.2 Libraries as organisations

As most literature on organisations deal with commercial, industrial organisations, which manufacture products, there is a question of how it can be applied to libraries which form a subspecies of public service organisations. Though there are sufficient similarities between the two types of organisation to warrant the transfer of research concepts and methods from one to the other, the differences are so great that it must be done with caution. For one thing, public service organisations are not to the same degree as industrial organisations dependent on their ability to perform efficiently and according to well defined goals and strategies. In the past, academic libraries seemed to be able to survive indefinitely giving mediocre and even bad service. The difference between public service organisations and industrial organisations in this respect may be lessening, however. The loss of a virtual monopoly on certain types of information to efficient, commercial information agencies as well as the development of extremely competent information providers in the library sector, for example the British Library Document Delivery Service, is a challenge which must be dealt with by libraries. And due to economic problems the public authorities are beginning to take a keen interest in the efficiency of the public service organisations. As an example, the Danish ministry of Education is proposing a reform of the system for allocation of budget to its academic libraries in which a part of the personnel allocation will be dependent on the number of books lent; if your lending rate falls or rises less than the average rise in the academic libraries, you will get less money the next years. On the other hand, the libraries as well as other public service organisations are now allowed to earn money performing fee-based services and to spend the money they earn, except for an overhead to the state, but on the condition that the pricing structure for services does not constitute unfair competition with private enterprises performing the same services.

Organisations and the market dependent industrial organisations may tend to fade away.

### 1.3 Delimiting the subject

Amongst structure of larger systems of libraries connected through networks, nor with the place of academic libraries in the total structure of their mother institutions. These questions are highly relevant to a global consideration of library structure and to a comprehensive treatment of libraries as organisations, but they are not my subject today.

## 2. ACADEMIC LIBRARY STRUCTURE BEFORE AUTOMATION

### 2.1 Preliminary remarks

Organisation structure does not have the inevitability of divine or natural law: it is a tool, it may be adjusted and changed in order to make the organisation perform better.

Certainly every library considers its organisational structure from time to time, and there must be hundreds of internal reports and memos dealing with organisational matters like structure and projects of structural reorganisation. Not much of it has filtered through to the library periodicals, and a search in LISA only results in a handful of references to articles dealing specifically and primarily with the internal organisational structure of academic libraries.

The question of library structure seems formerly to have been a matter for prolonged discussion in the British library community. At last year's IFLA conference it was one of the themes for discussion in connection with a symposium on the Reorganisation of University Libraries arranged by the Liber Association. In view of the pressure on academic libraries to adapt to radical changes in their academic mother institutions, to severe budget cuts and to the rapid development of information technology it is important for the academic libraries to maintain a continuous discussion and exchange of experience on library structure as a tool for institutional change and development.

### 2.2 Types of library structure

In academic libraries a typical structure is a functional one based on a division of the library into departments of acquisition, cataloguing, classification/subject indexing, physical preparation of books and circulation. Apart from the circulation department the other departments form a group which together may be termed internal departments or processing departments, each occupied with a discrete function in an assembly line procedure for processing new materials.

As for the non-functional or divisional structure two main types are seen, one based on collections or form of material and the other one based on subject.

In actual practice there are rather few examples — at least among larger libraries — of clearcut structures based on either one or the other principle of division. Most libraries have hybrid structures mixing the principles. Structural development moreover often seems not to be by general, systematic reorganisation but by accretion of new structural elements on an ad hoc basis.

### 2.3 The predominance of functional structure

Even if the structural picture is confused it seems that a major feature of library structure today is for the processing of new materials to be performed by structural units working on the books in succession, and with little or not personnel overlap between these units and those responsible for direct user services.

Moreover it seems that in comparison with the service departments the processing dominate the total structure of their departments library and disposes of a rather large share of the manpower of the library, easily more than half of it.

There are two advantages to a functional structure for the processing of books: first, individual staff members may develop a high degree of expertise on isolated parts of the total process. Processing staff thus tends to become a college of specialists each in a rather limited field of work. Secondly, there is or ought to be a certain economy of resources connected with a system where one individual performs one type of function only but for a large amount of units. This is of course the rationale behind the assembly line structure of manufacturing industries.

However, there are disadvantages to this structure as well as advantages. One is that the flow of books is impeded or stopped every time the capacity of a given working unit is diminished due to absences of personnel.

Another is that the various processing units tend to develop objectives and standards which may not be consonant with the overall objectives and standards of the organisation.

Thirdly, the fact that a great part of the library staff works only in internal departments and do not participate in direct user services means that the organisation as a whole tends to become less aware of the users, their needs, frustrations and satisfactions. As the user is invisible to large parts of the staff the formal objectives and standards of the library and especially the informal ones are defined without sufficient consideration of the user and, and therefore do not form the basis of an efficient service organisation.

A major symptom of this state of affairs is, as we all know, the development of large backlogs of unprocessed books and the acceptance of unreasonably lenghty processing time. High and resource-intensive referred to in extenuation constantly, of course, but in my opinion often without just cause.

In the absence of genuine user awareness the work in internal processing departments tends to loose its urgency. Books passing through the internal system become units in an endlessly flowing stream, and cease to be experienced as relevant information to be made available to the user as soon as possible. The internal process becomes sluggish and librarians get more obsessed with technicalities than with efficiency. Indeed efficiency becomes an ugly word, in opposition to "quality."

### 2.4 The movement towards subject structure

The predominance of a functional library structure has not gone unchallenged.

#### 2.4.1 The British discussion

In the UK the traditional division of departments by function or by form of materials was discussed and criticised as early as the middle of the 60es. The functional structure was seen as a reflection of the "rather conservative and custodial role of university libraries" and a movement towards subject specialisation began to take shape.

This movement, however, seems to have had greater consequence for staffing structure than for departmental structure as such. A new system of subject specialists, that is of members of the library staff appointed to organise library services in a particular subject field, was in many cases grafted on to the traditional function structure rather than introduced to replace it (TUNLEY 79). However, in such a hybrid structure as James Thompson has observed, functions still come first, and the subject system does not function adequately in times of stress and pressure (THOMPSON 1975).

A more radical approach has been taken in a number of very large university or polytechnic libraries, often operating on different sites, where the overall structure consists of a central department and a number of subject-oriented branch libraries at the service of single departments of the mother institution. The branch or subject libraries are typically so large that they retain an internal function structure and are difficult to distinguish from autonomous function structured libraries of the same size.

If our esteemed colleague of the British Library of Political and Economic Science, C.J. Hunt, is typical of the general trend in the UK concerning this matter, the discussion on subject as against functional structure may be out of fashion today. He writes: "The subject versus functional division argument is not worth pursuing: this debate has been based on fashion rather than fundamentals." I disagree with the viewpoint that the debate is not relevant to the fundamentals of libraries as service institutions. But the statement is indicative of the fact that conditions have changed since the 60es and 70es and that formal, departmental structure is not interesting if discussed without consideration of the people who are working in the structure.

#### 2.4.2 The Swedish case

In Sweden the pattern of development is to a large extent determined partly by the pressure exerted by the government to integrate department libraries as branch libraries into the general library structure of the universities, and partly by the new system for the financing and budgeting of universities and their libraries. This system implies that university libraries get their money from their mother institutions and no longer directly from the government. It creates an urgent need for the libraries to make themselves and their services visible and useful to the universities and faculties which they serve.

As a result of these pressures a number of libraries have developed a hybrid structure in which subject-oriented library departments coexist with central, function-based departments for acquisitions, cataloguing etc. The subject specialisation is in this case limited to the service sector of the library while the internal processes are still organised in a functional structure.

Some university libraries, e.g. the one in Stockholm, have gone a step further and radically divided their structure into subject based departments, which perform not only service tasks but also the internal processing of new books. In Stockholm there is moreover a tendency towards integration of functions within the subject departments, but this development is connected with the question of automation which I shall take up presently.

#### 2.4.3 Conclusion

To conclude this brief sketch of library structure before automation I stress the fact that all major types of organisational structure are found in libraries though functional structure seems to be the basic one.

Secondly, the need for libraries to become more service-oriented is leading to an increased dissatisfaction with function based structure and to the development of alternative structural models.

## 3 AUTOMATION AND LIBRARY STRUCTURE

Automation basically changes the conditions of structural development.

### 3.1 Automation and restructuring

It is a striking fact that whereas automation is today accepted by all parties in the academic libraries, the possibility of new organisational structures in connection with automation is often viewed with mistrust and diffidence, if at all acknowledged. Library managers will usually and correctly wish to enter into the automation process on the basis of a large consensus on the fundamental issues in the library. They therefore do not wish to engender illfeeling and animosity towards the process by introducing anxiety provoking ideas of new organisational structures into the discussions.

It is my opinion that such assertions are false. Library managers who believe in them are deluding themselves, and those who do not will soon loose their credibility if they pretend to hold them.

Automation is not a simple little tool, a demon who can be kept in the bottle and used at one's convenience.

It is such a potent force that it simply cannot be harnessed to old structures. The structures must be innovated as a flexible framework of the computerised library function.

In existing library structures it is sensible to acquire some actual experience with the automated processes before the structure is changed. There is a risk that a library may not want to change structure after automation has been assimilated into daily work routines and that automation may therefore be functioning inappropriately. This risk, however, may reasonably be run, since total automation of library functions is still such a new phenomenon that most of us do not understand its consequences sufficiently to introduce sweeping structural reforms before the automation takes place and effect.

### 3.2 The computer as an instrument of functional integration

An initial step in the examination of the relationship between automation and structure may be to analyse changes which result directly from automation and which have immediate structural consequences.

A first result of library automation is the merging of all catalogues into one. How it is organised inside the computer is irrelevant in this context. The point is that the total set of library catalogues, registers and indexes become one integrated system which is directly accessible to everyone everywhere in the library, and moreover that it may be used by many people at the same time.

The structural consequence of this is that since there are no longer different, physically separated catalogues, registers or sets of records connected with the various steps in the processing of new books there is no longer a need for a physical flow of books from one processing unit to the other. Secondly, the same functions may be performed at the same time by different people working in different locations.

A second result of automation and a consequence of the merging of catalogues into one is that only one record pr. book is needed for all purposes. The structural consequence of using the same records for different functions is that staff will gradually become more familiar with the functions performed in other departments.

When different people in different places can perform the same tasks at the same time, and when the same people in the same places can perform different tasks at different times, the traditional rationale for functional differentiation disappears. Functional differentiation is still possible, functional integration becomes possible too.

### 3.3 The merging of acquisitions and cataloguing

A first and obvious instance of function integration is the merging of acquisitions and cataloguing.

The reason for this is that in both cases a bibliographic record is created, usually less complete in the process of acquisition, but otherwise containing information identical with the essential cataloguing data.

In quite a number of libraries the catalogue record is created independently of the acquisitions record, and the cataloguer does not re-use data from the acquisitions process. In other libraries the acquisitions data are corrected and supplemented by the cataloguer. In both cases the data are retyped in the final version as catalogue cards or matrices of such and they may be written once again as acquisitions lists.

As described above, computerisation makes it possible to do with only one catalogue, common to the acquisitions process and the cataloguing function. In the acquisitions process a record is created which is corrected and supplemented in the cataloguing process, without the creation of yet another record.

Telecommunications, however, now make it possible for the library — to a large extent — not to create the initial record itself but to download it from external bibliographic databases produced by the book trade, e.g. Electre in France and the Menzies base in Nottingham.

In this case it becomes advantageous to apply the trained cataloguer's knowledge not after the books have been received but in connection with the transfer of the record from the external database to the library's own. The extent of correcting and supplementing the record after the book has been received depends on the quality of the external database used. In the case of the British National Bibliography there should not be a great need for corrective cataloguing.

On the basis of such considerations a number of libraries today are considering a structural fusion of the cataloguing and acquisitions departments, in which generally qualified staff perform either function. Books posing special problems with regard to bibliographic description will of course be referred to the local experts, and these will often be trained librarians. However, in the case of books the records of which are downloaded from national bibliographies, experienced clerical staff should usually be able to perform all the processing functions in connection with acquisitions and cataloguing.

### 3.4 Despecialisation of staff

Even if a department performs more functions than one, it does not follow that individual staff members must perform more than one of the functions. Functional differentiation may be maintained on the level of individual staff members even if functions are integrated on the departmental level.

However, the physical properties of computer terminals make it impossible for one person to work with the same, computer-based task all day long. A person, who has formerly been occupied full time with ordering books, can no longer do so when the ordering process goes online. Other tasks may of course be found in the acquisitions department, but it will prove increasingly difficult to find acquisitions tasks or other internal processing tasks which are not computer-based and terminal-linked. The obvious solution is to distribute the terminal intensive tasks between staff members so that all participate both in terminal-intensive work and work not based primarily on terminal use. The effect of this will be a move away from the present functional specialisation of staff towards a situation in which to a much greater extent they will be able to perform a number of different functions in the library.

Paradoxically, and because of physical conditions alone, the computer will force staff away from computer based functions. The result, I believe, will eventually be a move of personnel across the structural boundary between internal processing functions and external service functions, and in both directions too. This will demand a certain amount of flexibility on the part of staff, a will to perform more varied functions, and general versatility, it may not be to the liking of everyone, nor may everyone be able to do it, but for many librarians it may provide the basis for a more satisfying work situation and a more adequate use and development of knowledge and skills acquired during formal training and education.

## 4 TOWARDS SERVICE STRUCTURE

Some organisation practitioners think that structure is unimportant — the important thing is to change it from time to time.

A less radical and more widespread belief is that structure is important, but that there is no ideal structure for all organisations.

Though libraries constitute a rather clearly delimited group of organisations, they are so different, have such different specific objectives, such different user groups and situations that the same applies to them: there is no ideal library structure.

Library structure is therefore an organisational tool which should be shaped and reshaped as a flexible framework for concrete strategy to obtain the particular objectives of any given library.

The significance of the computer in relation to structure is to free structure from the bonds of function. Functional structure still under certain circumstances be an appropriate functional integration across library. However, creating a need for the individual staff members to be engaged in a certain amount of non-automated functions. As all internal functions will be automated, this can only be done by giving staff in internal departments a part to play in direct service tasks.

To fit this situation it is — in my opinion — necessary for libraries to develop a new service structure. By service structure I do not mean a particular type of organisational structure, but a structure which is fully oriented towards service. Depending on the circumstances of the library it may be a subject structure, a user group structure, a structure based on collections or even in some cases a functional structure. But as a service structure it must fulfill one of two conditions: either that all departments, as is the case in some of the above mentioned subject structures, have both internal and external functions, or that the boundaries between internal processing departments and external service departments should be permeable and allow all individual staff members to participate in direct service functions.

To introduce a service structure means that boundaries must be moved or that people must move across the boundaries. Ultimately the important thing about a service structure is that all staff should have extensive and even daily service functions. Only thus may it be ensured that both individual staff members and the global library organisation relates primarily not to books, but to users.

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# THE CONVERGENCE OF MANAGEMENT ATTENTION UPON INFORMATION: LESSONS FOR LIBRARIANSHIP

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**ABSTRACT**

*In the last decade there has been a remarkable, roughly fivefold, increase in the attention paid to information and information technology in the general management literature. This phenomenon is the aggregate of several particular concerns and topics that are only loosely related. Chief among those topics are: the use of information and information technology for competitive advantage; the problems of management of the information and information technology archipelago; information enterprise analysis; stage hypotheses concerning the development of information technology and systems; concern for the effect of information and information technology upon organizational structure and upon organizational and national competitiveness and productivity. This article reviews these topics, attempting to find relationships among them and with the traditional concerns of librarianship and information science. The major purpose of the article is to inform librarians about these developments so that librarianship can both learn from them and leverage them to increase the effectiveness of library services.*

### Introduction

An issue of some interest to librarianship, a field whose central interest is the handling of information, its storage, retrieval, and delivery, is the quite remarkable increase in attention in recent years paid to information and information technology by the general business literature.

It is important for the field of librarianship to be aware of this increased attention, and the reasons for it, for a number of reasons:

First, this increased attention, which is composed of a number of different threads, represents a large measure of very serious thinking some of it quite original, about information and information

technology. Much of that analysis derives from a viewpoint quite orthogonal to traditional librarianship, and we have much to learn from it.

Second, library services are typically support services, and for us to perform effectively, it is crucial that we be conversant with the concepts, the thinking, and indeed the vocabulary of those who manage the institutions we support.

Third, much of that increased attention represents recognition of the importance of appropriate and intelligent use of information and information technology, a recognition that is to a degree coextensive with the recognition of the utility and importance of librarianship. To make use of and leverage that recognition however, to use those tools, we must know their configurations, their strengths, and their shortcomings.

This article attempts to review, and to a degree to analyze that literature, and to serve as a summary guide to it. (Note a much more complete review by the same authors is scheduled to appear in the 1987 Annual Review of Information Science and Technology.)

The major components of this increased recognition of information and information technology are:

- Strategic and Tactical Uses of Information Technology
  - Competitive Advantage
  - Markets Versus Hierarchies
- Information and Strategic Decisions
  - Evolution of MIS to DSS
  - Recognition of the Importance of External Information
  - Competitor Intelligence
  - Decision Analysis
- Design of Automated Information Systems
  - Enterprise Information Analysis
  - Data and Data Flow Driven Design
- Information Resources Management
- Information Operations Management
  - Stage Hypotheses
  - Convergence of the Archipelago
- Information Technology and Organizational Structure
- Information Technology and Productivity

The indentation in the list above suggests some quasi-hierarchical relationships. The list is also in effect a table of contents for this article.

**Strategic and Tactical Uses of Information Technology**

One major cluster of concerns is that which might be termed the use of information and information technology (frequently referred to as IT in the general business literature) for strategic and tactical operations. Early in the 1980s, Gerstein and Reisman (1982) identified the strategic potential of computer technology, but expressed some puzzlement at the under-utilization of data processing as a strategic resource. Shortly afterward the notion of using information technology for competitive advantage burst upon the business world.

**Competitive Advantage**

The concept of exploiting information technology to gain competitive advantage has been perhaps the single most emphasized topic in the general business and management literature concerning IT. To simplify greatly, that literature may be said to have three central themes: 1) the securing of competitive advantage by reducing your own cost; 2) the creation of new value added services or capabilities; and 3) the creation of competitive advantage by reducing your suppliers' or customers' costs in a fashion that would increase their costs if they were to transfer their business to a competitor, that is by creating an efficiency based barrier to competition. The first and second points are relatively straightforward. The third point is more subtle. The now classic example of such use of information technology is that of a hospital supply company which provided microcomputers, modems, and inventory control software to its customers. Included was the capability, when triggered by the inventory control software, to reorder electronically (EDI) from that hospital supply company, but not of course from its competitors, for whom the customers would still have to spend time and money typing out orders by hand. Thus was created a customer efficiency based barrier to competition, an advantage entirely enabled by imaginative use of information technology (Parsons, 1983).

The most frequently commented upon and the most visible articles have been those of Porter (1985, 1987), Porter and Millar (1985), and Parsons (1983). Good summaries and comments on this area can be found in works by Munro and Huff (1985), and Earl and Runge (1987).

**Markets versus Hierarchies**

At the same time that it is being recognized that information technology can be used to change the way organizations complete (McFarlan, 1984), it is also being recognized that a major long term consequence of the new information technology is decreased cost of information and of coordination. This it is increasingly being argued (Malone, 1987) will tend to lead to proportionatily more use of markets rather than of hierarchies for the coordination of economic activity.

Markets coordinate economic activity through the aggregated effect of individual transactions between individuals and firms. Hierarchies coordinate economic activity through higher level managerial decision making. In reality there are of course numerous variants and hybrids, and all economic operations are somewhere on the spectrum between pure market and pure hierarchy.

The central thesis then is that the increasing capability of information technology is driving economic activity toward the market end of the spectrum, and towards greater competition. The present international wave of de-monopolization and privatization, which can in large measure be described as just such a shift in the balance between hierarchy and market, coincides neatly with the growth of real time capability of electronic information systems.

**Information and Strategic Decisions**

Another cluster of concerns has in common the concern for the use of information and information technology in strategic decision making. The classic early work in this tradition was that of King and Cleland (1975, 1977, 1978) who were forerunners in recognizing the interrelationship of information systems, organizational structures, and strategic decision making. In the same tradition, Millar (1984) used case study material to emphasize the point that an information structure should be developed in accord with corporate management's selections and definition of strategic success factors. Millar pointed out that one of the major difficulties in developing an appropriate information structure is that no one person is responsible for information and suggested the appointment of a chief information officer to oversee the merger of strategic planning and information processing.

**The Evolution of MIS to DSS**

Within the operational business information systems literature a major focus has been the transition from MIS, Management Information Systems, to DSS, Decision Support Systems. There have been charges that DSS is simply old wine in a new bottle, simply a response to the basic marketing precept that if one reintroduces a product that was a failure previously, one gives it a new name for its reintroduction; and there is probably some validity to that charge. In fact, DSS has not replaced MIS in operational terminology, and as a term, it is now rapidly disappearing in favor of AI (artificial intelligence).

Nevertheless, the DSS phenomenon did generate attention, and it did reflect some genuine changes in perspective. First, it recognized that the more strategic and truly managerial, the greater the reliance upon exogenous rather than endogenous information (Senn, 1978; Synnot, 1981; Hurtubise, 1984; Holmes, 1985; Koenig, 1986a). Second, it recognized that systems must conform to the culture and the expectations of the intended users, in particular the recognition that managers are not used to being told how to do their job, but rather what to accomplish. Third, it recognized the necessity that systems need to be user friendly, a somewhat belated recognition of Mooer's law (Mooers, 1959), that an information system will be used only if it is more trouble not to use it than it is to use it. There has been increasing recognition that MIS systems were not being used in the proactive fashion that their designers had in mind, but that the typical use of an MIS system by a manager is defensive rather than proactive (Alter, 1976). A major part of the DSS philosophy was to design systems that would be sufficiently attractive for managers to use.

**Recognition of External Information**

At least as far back as Anthony's now classic taxonomy of managerial functions (1965) there has been a recognition of the importance of external or exogenous information to strategic decision making. Again, King & Cleland (1975, 1977) were in the lead in emphasizing the importance of external information.

The failure of MIS systems to meet expectations, and the consequent reexamination of the assumptions on which they were based has resulted in a greater awareness of the importance of external information. Holmes (1985) and Koenig (1986) contend that in fact the principal cause of the disenchantment that arose with MIS systems in the late 1960s and 1970s was the failure to appreciate the role of external information in managerial decision making, and that many of the concerns and misgivings expressed about MIS systems (Ackoff, 1967; Dearden, 1972) while not incor-

rect, were not focusing on the most appropriate target, the limitation of most MIS systems to data generated from internal operations and their accompanying failure to provide access to appropriate external data.

**Competitor Intelligence**

Another thread in this cluster is that of competitor intelligence, which has produced a small flurry of recent publications, much of it stressing the necessity of good competitor and environmental intelligence for successful strategic decision making. Perelman (1983) saw business intelligence as the industrial equivalent of military intelligence and an essential input for strategic management. Business Competitor Intelligence (Sammon and others, 1984) and Competitor Intelligence: How to Get it, How to Use it? (Fuld, 1985) both provide recent examples of rising interest in sources of external information of strategic concern to organizations.

**Decision Analysis**

Another development focusing attention on the relationship between access to information and strategic planning has been the development of decision analysis by the Rand Corporation (Milliken, 1973; Menke, 1979). The basic notion of decision analysis is that one can estimate what the chance is that even though what has been selected is the alternative that is statistically the most likely to be the correct one, another alternative would in fact have turned out to be better. The expected value of that outcome times its probability is the EVPI, the expected value of perfect information, or less memorably but more descriptively, the expected cost of making a decision based on incomplete information.

From that concept follows the notion that at any decision point, an alternative to be considered is to gather more information and then return to the decision point, and other factors being equal, that alternative should be pursued if the cost of gathering more information is less than the reduction of the EVPI which will be accomplished. In practice, EVPI calculations are not widely used, primarily because of their complexity. None the less, the argument that there is an EVPI and that an alternative that should always be explicitly examined is to recycle and gather more information, is an argument that has served to create a greater awareness not only of the information dependency of strategic decision, but of the importance of explicit attention to the information acquisitions process.

**Design of Automated Information Systems**

The design of automated information systems represents another cluster of concerns. Concern for the effectiveness of the design process goes back to the classic Management Misinformation Systems article of Ackoff (1967), in which be pointed out a number of erroneous assumptions. The growing recognition that information systems must reflect the context of the organization which they are designed to support is best exemplified by the work of Keen and Scott Morton (1978).

Keen (1981) another major contribution in stressing the pluralistic nature of organizations, and highlighting the political nature of information systems development. Keen's work is particularly useful because it articulates many of the reasons for resistance to information systems implementation. For example, it had long been recognized that clerical systems such as word processing provided better data for evaluation of personnel, and concern about that evaluation catalyzed resistance, but Keen was the first to stress that higher level information systems were inherently evaluative as well, and that that also represented a major source of resistance. For librarians, now increasingly applying their skills to domains beyond traditional librarianship, and who come from a culture that assumes, generally correctly in that context, that more and better services will be welcomed, this is a rude but necessary shock which must be taken into account.

What increasingly came to be recognized is that the logical delimitation of modularity is the data that is passed between modules. Before two programmers can develop two modules in parallel, they must agree on what data will pass between them. From this realization there quickly developed structured analysis or data flow analysis methodology (DeMarco, 1979; Weinberg, 1980).

Two different conventions for representing and analyzing data flow arose, known as Yourdon, or as Gane and Sarson after their principal proponents (Yourdon 1975, 1979; Gane and Sarson, 1979; Martin, 1985), but the conventions effectively differ only in their method of presentation. The basic philosophy is simply that the first major step in attacking a system design process is to analyze that data or information flow in a top down fashion. From this data flow analysis both the system program modules and the required system data stores are derived directly. The consequence of this development has been a greatly increased awareness of the centrality of the information itself to the system design process, principally among MIS/DP staff, but that awareness has percolated up as well.

**Information Resources Management**

Another thread that should be mentioned, is that of Information Resources Management, though admittly it has received relatively little attention in the general business and management literature.

In the 1970s and 1980s. Horton (1974, 1979, 1981, 1982) developed the concept of Information Resources Management (IRM) to depict the notion of managing both the information resource (content) and information resources (tools) of an enterprise. The evolution of the IRM concept was an outcome to the United States Commission on Federal Paperwork, which ran from 1975 to 1977. As Director of the Commission's Information Management study, Horton articulated the need for 'efficient, effective, and economical management of the organization's information and information resources' (1981:18). This approach sought to formalize the treatment of information and deal with data as a manageable and budgetable resource, in the same way that organizations must deal with human, physical, financial, and natural resources' (1982:45). During the 1970s and early 1980s there were some parallel developments other countries including Canada and Australia (Broadbent and McIntyre, 1983).

The other major contributor to IRM was Marchand (1982, 1983) who identified Information management two dimensions: 'management of data resources' and 'management of the information processes'. The latter has to do with the interaction of the organization with the data resources and supporting technology for decision making and analytical purposes. This emphasis in this dimension was on the value of resources that were used in the organization. Marchand also developed a stage hypothesis of information systems development which is discussed below.

**Information Operations Management**

As information management, in its various guises, becomes an increasingly larger part of an organization's questions, the management of those operations has correspondingly assured greater importance in the management literature. Strassman's (1976, 1985) work which focuses on the cost control of information operations is the most obvious example of that concern. A sub theme within that concern is that of the reduction of unallocated cost, which Koenig (1987) argues is a major, and often overlooked, force behind the increasing tendency to place libraries and information centers on a cost recovery basis. Within the larger theme, are a number of important subthemes.

**Stage Hypotheses**

A major concern, driven in large part by the increasing proportions of organizational resources devoted to information systems, and some very genuine doubts as to whether value for money is being received, is that of how we can predict the future course and hopefully some of the consequences of the introduction of information systems. To that end, a number of stage hypotheses concerning information systems and information technology have arisen.

The first, and still the best known and arguably the most influential of these has been Nolan's stage hypothesis which attempts to describe the life cycle of systems and of individual technologies such as word processing or CD-Rom. The Nolan hypothesis was first set forth as four stages, (Nolan 1973a, 1973b), and later expended to six stages (Nolan, 1979). Those six stages are: Initiation, Contagion, Control, Integration, Data Administration, and Maturity. Perhaps the most commented upon ramification of the Nolan stage hypothesis is that ideally different stages should be met with different management strategies, looser in the initiation and contagion stages and tighter in the control and integration stages. That point has been expanded upon in particular by Lucas (1982, 1986) and by McFarlan (1983A) who reshapes, relabels, and returns the Nolan stage hypothesis to four stages: 1) identification and initial investment, 2) experimentation and learning, 3) control, and 4) widespread technology transfer. Implicit in the Nolan and McFarlan cycles is a shift in emphasis from management of the technology to management of the data or information conveyed by that technology. There have been criticisms of the Nolan hypothesis to be sure, particularly as to the extent and generality of its applicability (King, 1984; Sullivan, 1985), but it has received wide recognition in the data processing community, and substantial recognition in the general management arena as well.

Subsequently, there have been several proposed stage hypothesis which address the growth and impact of information technology broadly over time, as opposed to the notion of repetitive and

distinct life cycles for different technologies and different systems. The first of these, was that of Marchand (1983, 1985), who working primarily in the IRM, Information Resources Management, tradition, postulated a descriptive four stage development cycle of information management. The first stage (1900–1950) is — Physical Control, the second (1960s–mid 1970s) Management of Automated Technology, the third (mid 1970s–1980s) Information Resources Management, and the fourth (late 1980s–1990s) Knowledge Management. Marchand's stages proceed from supporting lower concern with technology, the carrier, to concern with contents.

Shortly afterward, but apparently quite independability Rockart (1984) characterized three eras of information processing, the First Era-Clerical and accounting, the Second Era — Operational, and the Third Era-Managerial. Rockart's characterization, which owes something to Anthony's taxonomy of managerial functions, is just that, a characterization. Gibson and Jackson (1987) however have taken the three eras, and fleshed them out into what they refer to as domains, derived from a benefit/beneficiary matrix (figure 1 below).

Figure 1

Gibson and Jackson Benefit/Beneficiary Matrix

| BENEFIT \ BENEFICIARY | Individual | Functional Unit | Organization |
|---|---|---|---|
| Efficiency | Stage II | Stage I | Stage III |
| Effectiveness | Stage II | Stage I | Stage III |
| Transformation | Stage III | Stage III | Stage III |

Domain I they describe as the automation of traditional back office operations, yielding benefits to the functional unit, at first greater efficiency and then improved effectiveness. Domain II, which came about with the advent of the minicomputer, followed shortly by the microcomputer, resulted in greater efficiency and effectiveness particularly for end-user computing. Now, they maintain we are entering the third domain which will result in greater efficiency and effectiveness for the organization, and the transformation of jobs, functions, and roles at all levels — individual, functional unit, and organizational.

A third stage hypothesis has been posited by Koenig (1986a, 1986b). The origin of this stage hypothesis is quite orthogonal to those of Rockart, Gibson & Jackson, and Marchand. It derives from a pair of observation's: 1) that the doubling periods of information technology tend to become very brief, on the order of a year or two, a phenomenon known as Moore's Law (Noyce, 1977), and 2) that there are three fundamental components of information systems: computation, storage, and communication (Sullivan, 1985). An analysis of those components in terms of their growth rates, argues Koenig, leads to three stages: Stage 1 (pre 1971) characterized by exponential Moore's law growth of computational capability, and relative stasis in storage and communication, Stage II (1971–1989?) characterized by exponential growth of computation and storage and relative stasis in communication, and Stage III (post 1989?) characterized by exponential growth of all three components. These stages it is argued not only have predictive utility, but they also have important ramifications for the robustness of system design, system management, and system obsolescence. Like Nolan, Koenig has extended his stage hypothesis, in this case adding a fourth stage derived from Moores' Law (Moores, 1959). This fourth stage will be ushered in by the achievement of continuous speech recognition. (Koenig, 1987b).

What is striking is the commonality of the three stage hypotheses Rockart/Gibson and Jackson, Marchand, and Koenig, particularly when they are graphically set out side by side, as in figure 2 below.

All three hypotheses place us now at very much the same point of development, leaving the second stage of automated information systems development and entering the third stage. The commonality of that conclusion, the support that the stage hypotheses lend to each other, gives us rather more confidence that we really are in

Figure 2

Comparison of Developmental Stage Hypotheses for Information Management

( ⟵ = Roughly the Present Time )

| Marchand Stages* (1983) | Rockart Eras (1984) | Gibson & Jackson Domains (1987) | Koenig Stages (1985) |
|---|---|---|---|
| Stage 1<br>Management of Automated Technology | First Era<br>Clerical & Accounting | First Domain<br>Efficiency and Effectiveness of Unit Operations | Stage I<br>Exponential Growth of Computation<br>Stasis in Storage & Communication |
| Stage 2<br>Information Resources Management | Second Era<br>Operational | Second Domain<br>Efficiency and Effectiveness of Individual Operations | Stage II<br>Exponential Growth of Computation & Storage<br>Stasis in Communication |
| Stage 3<br>Knowledge Management | Third Era<br>Managerial | Third Domain<br>Efficiency and Effectiveness of the Organization & Transformation | Stage III<br>Exponential Growth of Computation & Storage & Communication |
| | | | Stage IV<br>Exponential Growth of Computation & Storage & Communication plus Continuous Speech Recognition |

TIME ↓

Note: We have taken the liberty of excluding Marchands' first stage ( Physical Control: 1900 - 1950s ) as out of scope - pre-computer, and renumbering the other three stages.

the process of moving from one stage to another, a new stage which really will be qualitively quite different from what we have experienced in the last decade or so.

**The Convergence and Integration of the Archipelago**

Another major concern has been the management ramifications caused by the convergence of different information services, systems, and technologies in the organization. This is of course a logical subset of the larger convergence phenomenon, computers and telecommunications becoming for all intents and purposes one industry, which has received great attention in the press. What with the divestiture of AT&T, the privitization and opening to competition of here-to-fore single source PTT operations, and the steady stream of mergers and acquisitions across what were different industries, convergence is a buzz-word everywhere. Accompanying that awareness of the convergence phenomenon has come the recognition that as the various information technologies converge, so to do the managerial implication and requirements converge.

The principal interpreters of this concern and have been McFarlan and McKenney in their trilogy of articles in the Harvard Business Review about the "Archipelago of Information Services" (McKenney, 1982; McFarlan, 1983a, 1983b). Indeed the term "archipelago" has become standard shorthand for the issue. McFarlan and McKenney raise two principal points. The first derives from the circumstance that the different islands in the archipelago are typically spread across the organization, with, in a typical organization, data processing reporting to the chief financial office, telecommunications to the vice president for administration, the libraries (overlooked somehow by McFarlan and McKenney) to the vice president for R & D, etc. This great organizational dispersion of the islands of the information archipelago means that the accomplishment of convergence or coordination is a major managerial task, requiring either a substantial change in the organizational structure with many, including some very senior, toes stepped upon, or a complex and cumbersome cross organizational matrix like arrangement, or some combination of both. The second point is that the islands of the information archipelago are almost certainly at different points along the Nolan life cycle discussed above and therefore need different managerial approaches, and this too adds to the difficulty of centralized and coordinated management.

**Information Technology and Organizational Structure**

Concern for the effect of information technology on organizational structure has been a topic of concern since the 1960s. The classic work in the field is that the of Thomas Whisler who predicted that

organizations would become more horizontal, with fewer layers of middle management and fewer professional jobs (Whisler, 1970). Strassman (1985) makes the same point about information technology, arguing that it leads to 'Flatter' more horizontal organizational structures. Francis (1986) however, after analyzing a number of cases, argues that the effects upon corporate structure of the introduction of new information technology are primarily a function of what management intends to accomplish, and are only secondarily driven by the technology itself, and that there seems to be no consistant pattern toward flatter structures. Brophy (1985) has pointed out that in many cases, in particular the insurance industry, the typical consequence is to increase the ratio of professional to non-professional staff, a result quite opposite in direction to that predicted by Whisler.

More recent work trends to eschew generalization and focus upon specific contexts, and centers around the realization that much "traditional" organizational structure derives from the requirement to structure job domain, functions, and even whole departments around the availability of information. Any central file operation is an example of that necessity. Information technology however is increasingly providing the capability place the information where the user is, rather than require the user to go or be where the information is (Keen, 1981). The consequence of this is that information technology enables rather major changes in the structure of organizations, and this capability and its consequences demand management attention (Koenig, 1986a).

The larger point that is increasingly being recognized is that whether predictably or not, and despite the fact that telecommuting was over hyped, information technology is changing management structures in major ways.

**Information Technology and Productivity**

A major concern in business today is productivity, and one of the major, perhaps the major, component of that concern is the relationship between information technology and productivity. Most of what is written consists simply of anecdotal examples and hortatory charges to work smarter. It is difficult however to write more substantively because of the difficulties of measuring white collar productivity. There is also undeniable skepticism, expressed well by Schneider (1987) about the impact of information technology. To a degree of course that skepticism serves to enhance managerial concern for and attention to the appropriate implementation of information technology.

On the whole, the argument that there is a positive relationship between information technology and productivity and national competitiveness is taken for granted. In both the United Kingdom and France, major social charges have taken place as a result of that perception. In the United Kingdom, the Beesley report (Beesley, 1981) recommended the domonopolization of telecommunications primarily because of perceived enhanced international competitiveness. In France, the Minitel system which is having & profound effect upon French, society (DeLacy, 1987) is a direct result of the Nora-Minc report (Nora, 1978 & 1980) which recommended increase government support of information technology to preserve and enhance France's economic position and its cultural identity. Japan has targeted information as essential to its continued economic growth. Both Europe and the United States have responded with programs to support information technology.

In short, despite the lack of quantitative evidence about the nature of the relationship, there is a strong belief that the development of information technology is essential for increased productivity and competitiveness, and this belief, coupled with heightened concern for productivity and competitiveness in the world market has served to dramatically focus attention on information technology and the application of that technology.

**Summary**

There are now many different issues and concerns merging in the area of management of information and information technology, all serving to focus management attention upon information and information technology. In this article, those components have been grouped together in a quasi hierarchical fashion. If they were to be ordered by rank, in order of management attention, the order might be something like:

- Competitive advantage
- Managing the archipelago of information services
- Information enterprise analysis
- Information technology and productivity
- The remainder

The sum effect of all those components is substantial, and as a consequence management is paying attention to information and information technology as never before.

An old saying is "know your enemy" a more useful one with which we might hope to replace it is "know your potential allies," know their concerns, know their language, and we will be in a far better position to work cooperatively, to create services and systems that enhance our organizations, and to gain management support.

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* A key notion in contemporary business literature is that of 'critical success factors' (Rockart, 1982), the notion of identifying the key factors which an enterprise must do well to be successful, and then focusing management attention there. Much of the literature reviewed in this article assumes a knowledge of and builds upon that concept.

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## PROMOTING MAPS TO THE AUSTRALIAN PUBLIC NATIONWIDE MAP WEEK

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**ABSTRACT**

*Discusses the philosophy, origin and intent of Nationwide Map Week. The structure of mapping activities through out Australia is described, showing the relationships between the public and private spheres and state mapping agencies. The paper then focuses primarily on one state identifying the various organisations involved and explores the many ways in which knowledge of maps and related cartographic documents is brought to the public. Although Australia produces maps of a high standard the work of its map makers is not well known to the public. Nationwide Map Week attempts to tackle these problems.*

**INTRODUCTION**

The traditional role of the map maker has been concerned with the technical business of cartography and the marketing of the final products of these endeavours has never quite received the attention it was due.

In Australia the development of map collections which burgeoned in the early nineteen seventies due to the Whitlam Government's interest in establishing many more colleges of advanced education, had some impact on mapping organisations. This was demonstrated by the gradual cessation or restriction of gratis map distribution arrangements to libraries by many map producers. Not all map producers have followed this course fortunately, and in fact some mutually agreeable relationships have been set up between states, as in the case of state libraries, whereby the library in a particular state will receive the mapping of another state through that state's mapping organisation in exchange for a reciprocal arrangement in favour of it's own state library. Certain major mapping organisations still maintain a distribution programme to academic map libraries, but the climate that prevailed in the sixties has

passed and economic realities have to be kept to the forefront in the eighties.

Cost recovery is a phrase that is being heard more and more within government and this has to be effected by whatever means available. The manifestations of a change in approach is underlined by the appearance of map promotion and marketing personnel within large government map making organisations. Along with this goes rationalisation of products and services and latterly amalgamation and stream lining of mapping bodies.

One of the approaches devised to heighten awareness and stimulate interest in maps and mapping among the Australian people is Nationwide Map Week. As the title suggests this is to be an Australia wide event held during a particular week of the year. The idea emanated from the National Mapping Council and the first Map Week was held in September 1979. Since that initial event two further Map Weeks have been held in 1982 and 1986.

**The National Mapping Council of Australia**

The Council was set up in the post World War 2 period for the specific purposes of planning and co-ordinating the geodetic survey and mapping activities within Australia. It operated through co-operation and co-ordination alone and having no powers it therefore relied on a successful rapport between its members.

Initially, the Chairman of the Council was vested in the office of the Commonwealth Surveyor General. Other Commonwealth members were the Director of Survey-Army and at a later stage the Hydrographer of the Royal Australian Navy. The six states of New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia were represented by their surveyor generals or directors of mapping. Still later in the seventies the Northern Territory was invited to join the Council.

Following on the transfer of the geodetic and topographic mapping activities for the continent to the newly created Division of National Mapping within the Department of National Development the chairmanship of the Council became permanently vested in the Director of National Mapping. To clarify the position even further it should be explained that the Division of National Mapping was created from the original National Mapping Section, later known as the National Mapping Office within the Department of the Interior, which was formerly under the jurisdiction of the Commonwealth Surveyor General who was also at that time designated Director of National Mapping. The Council has functioned since 1945 and has overseen a period of tremendous activity during which the geodetic and mapping advances have been truly great. During this forty year period the geodetic survey has been achieved and a national mapping programme commenced to undertake the topographic coverage of Australia at the scale of 1:250 000. This programme has been completed by the Division of National Mapping and the Royal Australian Survey Corps, between the years 1945–1966.

At the 1986 meeting of the Council a resolution was adopted that the Council meet with industry groups in both the public and private spheres with a view to preparing a plan for a peak industry council. The reasons for this move have not been fully and publicly stated, but suggestions of strain within the organisation have been admitted. Other statements point out that the original purpose of the Council has been achieved and that the development of new information handling techniques demands an organisation responsive to the new environment. Much of the dissatisfaction with the National Mapping Council appears to have arisen from the states, and the overlapping roles of the two principal commonwealth mapping bodies initially highly successful in bringing about steady progress with the national mapping programme has now resulted in friction that has ultimately resulted in the demise of the Council. The Council also recommended at its 1986 meeting that it be replaced by an Inter-Governmental Advisory Committee (IGAC) on surveying and mapping, which would advise on such matters which affect governments within Australia. This appears to be a very similar body to the original National Mapping Council although its suggested functions are to be more restricted. Following on these resolutions the federal government amalgamated the Australian Survey Office and the Division of National Mapping in July 1987, to form the Surveying and Land Information Group (SLIG) within a newly created Department of Administrative Services. The Commonwealth Surveyor General was appointed General Manager of the Group which is structured into two branches, known as Operations and Resource Management headed by the previous Director of National Mapping and the Policy and Information Service. Effectively, this means that Australia has no visible national or international representation a truly sorry state of affairs as far as map users are concerned, and an appalling waste of tax payers' resources. The efforts that have been put into marketing Natmap and its products to the Australian public are now so much wasted effort with the removal of both the name of the Division and the Natmap logo from all its products.

**The Australian Surveying and Mapping Industry Council (ASMIC)**

The setting up of this peak council was resolved at the fourth Australian Surveying and Mapping Industry Conference held in Brisbane in August 1987. Its role is to stimulate and facilitate the economic effectiveness of these industries and to support the physical, social and economic development of Australia as well as support strategic purposes. Present at the first meeting were representatives from the following interest groups:

The state governments, the Association of Consulting Surveyors Australia, the Association of Aerial Surveyors of Australia, the Australian Surveying and Mapping Lecturers Association, the Institution of Surveyors Australia, the Institution of Engineering and Mining Surveyors Australia Inc., the Australian Institute of Cartographers, the Australasian Urban and Regional Information Systems Association Inc., the federal Department of Industry, Technology and Commerce, the Hydrographic Society Australasian Branch and the Australian Council of Trade Unions.

The new Survey and Land Information Group (SLIG), the Department of Defence and the Northern Territory government although invited did not attend.

**The federal and state mapping agencies**

The last two decades have seen some very radical changes within mapping organisation throughout Australia. Most of the major bodies are still in the throes of these changes which are continuing. The most radical change has been from manual to automatic systems of cartography involving the conversion and creation of data in digital format accessible by computers.

The other major change has been the introduction of geographic and land information systems, which include a mass of data much of it belonging to other government authorities. The trends today are towards developing interfaces and integration between these data banks and computer assisted mapping facilities of the state mapping bodies.

Along with these changing methods of mapping there have been changes also within mapping bodies, both in terms of departmental affiliations, internal structure and organisation, and adoption of new functions and new names as the earlier part of this paper has highlighted.

**The National Mapping Programme**

As stated previously the National Mapping Programme's major effort has been with the production of the 1:250 000 map series, a topographic series in 543 sheets covering the continent. Approximately, one fifth of these sheets were contoured and the remainder planimetric. Many of the sheets are now twenty years old and are being replaced by the Joint Operations Graphic (JOG) and the National Topographic Map Series (NTMS). Total replacement is programmed for 1989.

After completion of the 1:250 000 series the 1:100 000 became the priority scale. Sheets of this series are published for the coastal areas of Australia and inland to about 400 kilometres. The inland areas are compiled but not published. The two agencies responsible for this scale are the Division of National Mapping and now SLIG, and the Army. Some of the later maps in this series have resulted from derived mapping supplied by the states at larger scales.

**The Survey and Land Information Group (SLIG)**

This body has taken over most of the functions of the previous Division of National Mapping and its mapping activities are in the process of being scaled down. The enormous effort required for the initial mapping programme is no longer needed but it is yet vital that those efforts are not dissipated by neglect of the revision programme. This is causing some concern at the moment not only among users but also staff who were concerned with the original mapping programme. Apart from revision of the topographic series mapping SLIG is responsible for a range of thematic mapping. A series of leaflets indicating availability of the following types of maps are to be obtained from SLIG; topographic series, bathymetric series, general reference and thematic maps at 1:1 000 000 scale and smaller, maps and aerial photographs of Antarctica, aerial photo coverage of Australia and digital data. Requests for details of a variety of thematic atlases of census housing and resources should also be made to SLIG.

**The Royal Australian Survey Corps**

Besides the 1:250 000 and 1:100 000 series the Army also maps at

1:50 000 and 1:25 000. The 1:50 000 series commenced in 1975 and covers quite large areas of Western Australia the northwestern part of the Northern Territory, south eastern South Australia, south eastern Victoria, central tablelands and south coast area New South Wales and very small portions of Queensland. These maps are available to the public through the normal retail outlets.

The Army also produces aeronautical charts for the Royal Australian Airforce and prints hydrographic charts for the Royal Australian Navy. Its first commitment is of course to the Australian Defence Forces and to natural disaster requirements as they arise. Australia assists overseas countries in south east Asia and the south west Pacific as part of a Defence Co-operation Programme.

**The Royal Australian Navy**

The Royal Australian Navy Hydrographic Service is responsible for publishing charts of the waters of the south west Pacific south east Indian Ocean and the Southern Ocean, in effect covering an area extending from Torres Strait in the north to Antarctica and extending from the mid Indian Ocean area to the Tasman Sea. Ocean, coastal and port and harbour plans are produced.

The RAN Hydrographic Service also contributes towards the International Hydrographic Organisation's world chart series at scales of 1:10 000 000 and 1:3 500 000. As the repromat is freely exchangeable these charts can be obtained in a variety of languages. Australia publishes five charts in the 1:3 500 000 series.

Production of Australian charts is shown on the Index of Australian Charts published in two sheets and available from the RAN Chart Agency in Sydney or from any of their commercial outlets.

RAN charts need to be used in conjunction with charts produced by other maritime agencies, notably the port and harbour authorities in each state, in order to achieve complete coverage of Australian waters.

**The State Mapping Agencies**

The state surveying and mapping organisations as might be expected operate a variety of scales, not all of which are mutually exclusive, to provide individual state coverage. As the national scales of 1:250 000 and 1:100 000 are produced largely by the federal agencies state bodies operate within the range 1:50 000 to 1:500, with the exception of Tasmania, where the major scale is 1:25 000.

Areas are mapped at the scale most appropriate for the purpose required, but it is generally safe to assume that large scale mapping is associated with urban areas and areas of accelerating development. The emphasis in state mapping is on cadastral information and this particular form is the basis of the new data bases being set up in each state.

Initially topographic mapping was published at imperial scales 1:253 440, 1:63360 and 1:31680 and all county and parish maps at the two larger scales just quoted. These scales are now redundant and only metric mapping is available. The information has in many instances, particularly in regard to cadastral mapping had to be laboriously converted to metric equivalents for digitising into computer accessible cartographic data bases. This has been a mammoth task when one takes into account the associated title information, distances and acreages that also required conversion.

All the states and the Northern Territory issue annual brochures showing the availability of maps on a series of index maps. Apart from topographic and cadastral mapping by the major state mapping agencies there are also a large number of other government departments both state and commonwealth that produce thematic maps. The easiest way to obtain information about the varied output from these sources is via the Thematic Mapping Bulletin an annual publication issued by the defunct Division of National Mapping. One hopes that this publication will continue to be issued by the Survey and Land Information Group. Apart from maps actually published it has a section on maps in the course of preparation. Information is supplied on a voluntary basis by state and commonwealth agencies, but it is a very useful publication as it includes addresses of mapping organisations.

**The Private Sphere**

The private sector is a small part of the total scene which is largely dominated by government but within this sector may be found firms specialising in photogrammetry, surveying and cartography, publishing and printing. These firms service a wide range of clients and receive a considerable work load from federal, state and local government. Several undertake work in southeast Asia and the southwest Pacific region. Apart from specific customised products which would be the bread and butter of a large proportion of the private sphere, there are small number of firms actually producing cartographic products for the general market. These include publishers of atlases, street directories, tourist maps and facsimiles of historic maps.

**Nationwide Map Week**

As stated at the beginning of this paper Nationwide Map Week is an exercise in public relations, the main aim being to educate the man in the street about Australian maps and their availability by putting before the public a range of map products and other cartographic publications. To be most effective this exercise should be held concurrently in all states, as national events are not possible without total involvement. Each state has its own Map Week Committee drawn largely from government mapping organisations, the education sphere and associated professional organisations and societies.

For the third map week held in 1986 a national steering committee was set up which met five times. The Victorian report emphasises the considerable benefits which this brought, chief among which was the co-ordination and rationalisation of efforts expended. It would appear that matters of common interest such as poster design and printing, general publicity and the search for a national sponsor should be the responsibility of such a committee, likewise the co-ordination of any national event that crosses state boundaries such as the 'Southern Cross' air rally organised in 1986.

Effective promotion costs money as the reports of the various state committees underlined and can be quite crucial to the success or otherwise of their efforts.

The target population has been broadly seen to be government and local government, industry and commerce, school children and the general public, who are reached principally through the sporting and recreational groups.

Activities have included map displays in a variety of locales, a map drawing competition for schools with prizes publicly awarded during Map Week, lectures and films to students on map making, a career night for students interested in cartography or surveying careers.

Exercises such as a city map walk around Melbourne with sets of questions, this for student groups, and an orienteering competition for the more energetic have proved successful. A fun event such as a giant map of some sort was an attention getter in several states. In Queensland Sunmap, the state governments's principal map maker, displayed a giant map on one wall of a multi storeyed building. Needless to say once erected that map stayed there for many months to remind Queenslanders of the usefulness of maps.

In New South Wales two enterprising cartographers constructed giant jigsaw maps each approximately 3.5 metres square and comprising thirty nine pieces each. The maps were created by projecting the initial outline of Australia onto the sheets of masonite used as the base using an overhead projector, and then painting in the detail by hand using enamel paints. Once created the jigsaw maps were used for a public map competition with two teams of children competing to be the first to complete the map of Australia. This was a fun event for both the competitors and the onlookers and was held in a central city location during a lunch hour.

In Victoria something more akin to the Queensland giant map was the 1:250 000 map of Australia laid out in the city square. The map was constructed from 600 sheets and took four weeks to assemble. When placed in the square it took four hours to set up. The entire map was covered by contact adhesive to protect it against the elements. Such a focus provides a good venue for the enterprising to sell their products, as was done by one firm from a hired caravan in the city square. During the 1986 Map Week in Victoria a major exhibit was erected in the Museum of Victoria which was on display for two weeks. The exhibit included coloured Landsat images, weather satellite maps, orthophotography of Venice, Soviet Soyuz photographs and interpretation, colour stereo photographs maps from foreign countries, tactual maps, raised relief maps as well as demonstrations of map making equipment in use. Over seven thousand students were shown through the exhibit and a further three thousand members of the general public attended without an organised guide. Schools have responded well to both the map drawing competitions (1100 entries) and the exhibits and it is obvious that these features must assist teachers greatly to expose their students to products which they are not likely to see in the school environment.

Also aimed at youth were the kits sent out to schools, although these were also available for the general public at various venues. Kits (of which eight hundred were distributed) included maps such as the 1:100 000 scale topographic, road maps and airline flight maps, information pamphlets on National Mapping activities and services, list of maps which could be purchased in Victoria and a

pamphlet on map reading. These were well received by the community.

For the adult aeronautical enthusiast an inter-state air race was staged, which unfortunately was marred by appalling weather conditions. This might otherwise have been a worth while publicity event combined as it was with displays of specialised air navigation maps.

Inretrospect a number of problems attend all such efforts at publicity and promotion. For those who might contemplate a similar enterprise much can be learnt from others experience. This article can only mention briefly the major obstacles to be encountered, chief among which is funding. Much can be done by enthusiasm and hard work, but to make these efforts really worth while an assured budget is a good starting point. Experience in Australia has shown that private enterprise finds it hardest to give time and money. The last map week in Australia was held in climate of severe economic restraint when all sectors of the community were suffering from funding and staffing cutbacks. Sponsors therefore are an important facet in such endeavours.

The search for sponsors needs to be a full year ahead of any proposed event. This permits possible sponsors to budget the event into their forward financial planning. Promotion requires the support of a publicity and promotion expert on the organising committee and the interest of key bodies within the media sphere in radio, television and newspapers. This sounds like big money, but there are ways of keeping costs down which have to be learnt.

Finally the organising committee needs to have representation from a wide range of interests, including map makers both official and private, the education sphere embracing schools, colleges and universities, the department of education and educational associations such as the geography teachers, history teachers and map curators. The professional bodies of cartography and surveying should also have representation. Map users need to be included from a selection of sporting and recreational groups.

Australia does not have a population that is basically familiar with maps. This is very evident to anyone working in the interface between makers and users, and it is sometimes painfully apparent at the tertiary level that the standard of map knowledge of first year university geography students is abysmal. This suggests that there is something amiss in the school curricula which warrants attention. Hence the emphasis in Map Week on the next generation, perhaps it might lead to closer relations between the education system and map makers to the benefit of all.

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Nationwide Map Week 86 Victoria — a summarised report of the activities of the Victorian Committee.

Nationwide Map Week. Victorian Committee 1982. Summarised report.

SLIM Newsletter Summer 1987/88

SLIM Newsletter Spring 1987.

Minutes of Map Week Committee 1982. Tasmania.

Minutes of Map Week Committee 1982. South Australia.

Map Week. Queensland 1982.



My thanks to Mr. R.E. Holmes for making minutes of the above committees available.


**Major Australian Map Publishers**

Survey and Land Information Group (SLIG)
Department of Administrative Services,
P.O. Box 2,
Belconnen, A.C.T. 2616

Royal Australian Survey Corps
Map products available from SLIG or State mapping bodies listed below.

Royal Australian Navy Chart Agency,
P.O. Box 1332, North Sydney, N.S.W. 2059

Central Mapping Authority of New South Wales,
Panorama Avenue,
Bathurst, N.S.W. 2795

Department of Lands and Housing,
Mapping and Information Division,
P.O. Box 1680,
Darwin, N.T. 5794

Sunmap Centre,
Queensland Government Map Shop,
Cnr. Main and Vulture Sts.
Woolloogabba, QLD. 4102

Mapland,
G.P.O. Box 1047,
Adelaide,
South Australia 5001

Tasmap Sales Centre,
G.P.O. Box 44A,
Hobart, Tasmania 7001

Division of Survey & Mapping,
Department of Property & Services,
Map Sales Centre,
318 Lt. Bourke St.,
Melbourne, Vic. 3000

Central Map Agency,
Cathedral Avenue,
Perth,
Western Australia 6000

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## THE NEWSPAPER IN THE COMMUNITY: THE AGE INFORMATION SERVICE AS A SUPPLIER OF COMMUNITY AND BUSINESS INFORMATION


Prue Lovell, *Manager, The Age Information Service, Melbourne, Australia*



**ABSTRACT**

*The Age is one of Australia's leading newspapers and has for over 130 years played a leading role in the community it services. One of the initiatives that demonstrates this role is the Age Information Service. This article describes how the Age Information supplies both community information through its free enquiry service, and carries out newspaper-related research for business clients.*
*March 1988*


The Melbourne Age is one of Australia's leading newspapers, and is regarded as one of the best newspapers in the world. It was first published on 17 October 1854, when the settlement of Melbourne was less than twenty years old and experiencing enormous growth due to the discovery of gold in Victoria. The Age quickly established itself as a major force in the colony's political and social life, through the influence of its second proprietor, David Syme. From its first edition, the Age held to certain objectives. It was to be:

> "A journal of politics, commerce and philanthropy dedicated to the record of great movements, the advocacy of free institutions, the diffusion of truth, and the advancement of man. The politics of The Age will be liberal, aiming at a wide extension of the rights of free citizenship, and a full development of representative institutions. The Age will aim at being comprehensive, accurate and impartial . . . a historian of passing events."

Under David Syme the newspaper became a crusader on many issues of the day. These included land reform and constitutional change, compulsory secular education, electoral equality and in particular trade protection. Conservation and social issues were also canvassed.

This early tradition was maintained in later years. Since the 1960s the Age "Insight" team has been a leader in investigative journalism, with its in-depth coverage of a range of social, political and economic issues including youth unemployment, tax evasion, organised crime and government scandals.

In 1984 "The Age Tapes" were published. These were transcripts of illegal recording of telephone calls by members of the New South Wales police, which ultimately led to a Royal Commission of enquiry, evidence of organised crime in Australia and the trial of a High Court judge.

As well as being a major provider of news, the Age has demonstrated a commitment to community service. This has been reflected in campaigns through the pages of the newspaper, designed to raise public consciousness about social issues. These have included the "Minus Children" appeal that highlighted the plight of the intellectually handicapped in Melbourne institutions,

and "Give the Yarra a Go," a campaign to clean up the environmentally neglected Yarra River which runs through Melbourne.

The Age Information Service is another example of the Age as an important part of the Melbourne community. It was established in 1980, with a brief to act as a provider of free information. The Service was to give access to information which because of its current or ephemeral nature was not readily available from traditional sources such as books. Leisure, recreation, adult education and community services were key areas identified as falling into this category. They were also subjects of increasing interest to the community. This was a period of the growth of community education, which promoted participation by adults in non-award personal development and hobby courses. It also coincided with the launch of 'Life Be In It', a government-sponsored campaign designed to promote health, physical fitness and active recreation in a population largely devoted to spectator sport and sedentary lifestyles.

The Age was a major source of information about these activities. For example, it published a weekly supplement called Weekender which contained articles about leisure and recreation activities and a section called "What's On," where community groups could advertise events free of charge.

The establishment of a service to collect and distribute this information throughout Melbourne seemed a logical extension of the Age's activities and further expression of its commitment to community issues. It was, however, unique in that such a free service was being provided by private enterprise. Up to that time, provision of such information had been the province of government, voluntary and welfare organisations. As far as the Service is aware, it is still the only one of its kind in Australia.

In establishing the Information Service, the Age sought not to duplicate existing information resources but to complement them. The original concept included provision of careers advice, but this was abandoned because early discussions with existing information providers showed that the field was already well covered, and required specialist staff. The same applied to welfare information and legal advice. The development and maintenance of links with other Melbourne information providers at all levels was a high priority, in order to avoid duplication and encourage cooperation.

Before opening to the public in August 1980, the Information Service spent six months creating its data base. A variety of systems (all manual) was installed to handle the various types of information being collected. In each case the main criteria were speed and ease of access, as the nature of the information would call for frequent updating, and not all staff were trained librarians. A very small library, consisting mainly of directories, was purchased. Subject files were created using headings that suited the Service's needs and the diverse range of material being collected, rather than any existing thesaurus. An organisational contact file, cross-referenced by subject, formed the backbone of the information collection. Most of the information held by the Service was obtained from an enormous range of community and government organisations, and frequent referrals would be made to those organisations. It was envisaged that ultimately some of the files would be computerised, but later experience showed that in many cases manual systems were satisfactory, or even preferable.

The Information Service staff always accepted that this would be an ever-changing information collection, very much user-driven. Until public enquiries were received, it was impossible to know exactly what type of information would be most in demand. Therefore, the data base systems had to be flexible so they could evolve in response to that demand. The success of the systems created can be measured by the fact that they have remained essentially the same over the years, despite considerable changes in the nature of the data they contain. Also, a number of other community and government information bodies establishing enquiry services have consulted with the Age Information Service is setting up their own systems.

From the time the Age Information Service began operating in 1980, to the end of 1987, over 227,000 enquiries have been answered. The emphasis is on rapid, accurate supply of information, either directly or by referral to more appropriate sources. Detailed statistics were kept of all enquiries received, and several trends quickly emerged:

Firstly, many people were unaware of the information resources available to them in the community — even fundamental services like public libraries. Secondly, many callers contacted the Information Service just because it was part of the Age, and to them the Age was an authoritative institution that SHOULD be able to answer the queries, no matter how obscure the subject. (Interestingly, when the Age conducted a survey in March 1988 of prominent Melbourne people, asking which individuals and institutions they believed were most influential, the Age itself received the highest ranking, ahead of the police, universities, political parties and churches.) Finally, many enquiries related to the Age itself, particularly to information that had been published in the newspaper.

The Service responded to the first of these trends by trying to play an educational role, encouraging callers to use other information resources, particularly those at a local level. Secondly, it was important for the reputation of the Age as much as the Service itself, that accurate and effective information should be given. Finally, better systems had to be devised for providing information relating to the newspaper.

In the fields of leisure, recreation and community services, the Information Service was well able to supply information that had been published in the newspaper, for it was a major source of that information and relevant articles were being indexed and filed. But enquirers were seeking not only information such as theatre or restaurant reviews, travel and leisure destinations, or contact details for new self-help groups. They wanted book reviews, references to political issues and articles about the economy. In response to that demand, the Information Service began a subject index to the Age in 1982.

Relatively few newspaper libraries in Australia are automated, even today. The traditional information storage methods are manual — card indexes and clippings files. Few subject indexes existed for the Age, and none had been attempted for many years. The Information Service's approach to indexing was the same as to the rest of its database — the system had to meet user needs, and had to enable fast location of relevant information in order to answer telephone enquiries. The index is in manual card form, which means it can only be accessed by Information Service staff. Its main advantage is that it is inexpensive to maintain (currently one indexer working thirty hours per week indexes virtually the entire editorial content of the newspaper). It also fulfils its objective of allowing quick, accurate answers to enquiries regarding recent material published in the Age. Eventually the index will be replaced by an automated library system, so it is unlikely to be computerised in its own right.

An important reason for beginning the Age index was the location of the Information Service. For the first four years of its life it was housed separately from the main Age office, and so had no direct access to the Editorial library. The rationale for this location was that because the Age building is on the edge of the central business district, it would not be convenient for users who wished to call in person, but in fact most users contacted it by phone rather than by personal visit. It had also become apparent that increasingly the demand was for Age-related information. Initially the proportion of enquiries was 60% community service to 40% Age-related. By the end of 1987 the emphasis had shifted, with over 80% of enquiries relating to the Age.

Once the Service relocated to the Age building it was able to seriously consider exploring new business opportunities. With the growth of local information resources such as community centres and municipal recreation officers, there was a reduction in demand for some types of community information. Other types are as important today as they were eight years ago. An example is school holiday activities. The Age Information Service is still the only central source for details of such activities in the Melbourne area.

But increasingly it was clear that clients, especially the growing number of business users, wanted newspaper information. And they wanted not only dates of articles, as provided over the telephone from the Age index. They wanted a newspaper research service, and were prepared to pay for the convenience of obtaining access to published information, whether on social issues, the economy, political events, legal cases or companies. In order to meet this demand, the Information Service launched Agesearch in January 1986.

There is an old cliche that says "today's newspapers are tomorrow's fish and chip wrappers." As everyone in the information industry knows, that is far from the truth. Newspapers are a vital information source. They record not only the major economic, social and political events of their time, but the trivial day-to-day happenings.

They reflect the views of both the important players in those events and the ordinary person. Newspapers, especially serious ones like the Age, are significant for their commentary and analysis of events and issues. In the case of the Age, it has reported and reflected Melbourne and Victorian society for over one hundred and thirty years.

Searching out newspaper information can be a tedious process. Not all newspapers are on-line, the Age among them. Even where newspapers are available on-line, records date back only a few

years. In any case, not everyone who requires newspaper information has direct access to on-line services, or the time, expertise or inclination to do their own research. Researching information from the Age required extremely time-consuming browsing of back copies or microfilm. The Age Information Service was ideally placed to supply this market. The objectives were the same as for the free information service, with the emphasis on quick response and provision of accurate, effective information.

Of course, newspapers answer only certain information needs. They are an ideal, even essential, source of ongoing coverage of political events, for comment on social issues, for company, financial and industrial news, details of court cases, biographical profiles and interviews with people in all walks of life. These are the types of information requirement that Agesearch seeks to meet. It will research specific information projects and also packages newspaper articles on current topics of wide interest. In 1987/88 these packages covered such issues as AIDS, Privatisation of government authorities, WorkCare (workers compensation scheme), Media Ownership and the Stockmarket Crash.

Being part of the company that publishes the information, Agesearch has the advantage of being able to supply photocopies of articles from the Age and affiliated publications. At the time of writing these included leading Australian newspapers and business journals such as the Sydney Morning Herald, Australian Financial Review and Business Review Weekly. The reputation the Age Information Service has built up over the years and the fact that many people automatically turn to the Age when seeking newspaper information also made it easy to establish what was essentially an extension of existing activities. Agesearch was not an information service looking for a market but very much a market-driven initiative.

Agesearch uses its own information resources, the Age subject index and Editorial libraries, supplemented by on-line searching of other databases. Clients cover a wide range of companies and businesses, utilising Agesearch on a regular or occasional basis according to need. A recent client survey, conducted by the Age Market Research department and an independent research firm, found that 90% of users were very happy with the service they received and would use Agesearch again. Speed and the quality of service and staff were major reasons for client satisfaction.

This reflects the Age Information Service's priorities — whatever the information being provided, free or paid, high quality service is of paramount importance. The Service will continue to endeavour to meet community needs for newspaper-related information and research services. This in turn reflects the commitment the Age continues to have to the community it serves. The spirit of the 1854 objectives still applies, although restated for the 1980s as the following philosophy:

> "The Age will remain a forum for ideas and talents. It will be a newspaper of record and will play a positive and creative role in the development of Victoria. It also will continue to be an independent and critical voice in national and community affairs. To achieve these objectives the paper will strive for a comprehensive and balanced news coverage and for independent and informed comment and analysis. The editorial policy of The Age will remain as it has been: independent of party and sectional interest, socially reformist, financially prudent, but nevertheless innovative."

By continuing its commitment to these principles, the Age will ensure the ongoing relevance of quality newspapers to a society increasingly dominated by electronic information and entertainment.

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# LIVING TOGETHER WITH MICROCOMPUTERS AND COMPUTER READABLE MATERIALS IN LIBRARIES

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**ABSTRACT**

*Microcomputers with their ever increasing capabilities and ever-decreasing cost will soon become as common items in everyday life as are audio-visual devices and materials today. Mainframe and minicomputers are meant for the professionals and have been mostly remote companions of well-off libraries, while microcomputers offer computing power to the man in the street and changes the status of library computers from a remote, occasional companionship to a live-in kind of partnership.*

Computers in the form of micros keep moving into more and more libraries worldwide. Along with the micros comes also the dowry: computer readable materials, and like guests of the wedding party, come patrons requesting microcomputer-related information and access to computer readable materials.

All these have tremendous impact on the acquisitioning, cataloging, circulation and reference work in libraries, and librarians should be educated and trained to live together comfortably and knowledgably with both the new media and patrons' requests, as well as to cope with the challenge posed by the proliferation of software and computer readable data files. Librarians — and not only those in special libraries — have to learn about microcomputers not merely as a tool of library work, but also as the subject and object of it.

The author discusses the characteristics of a modular course on "Microcomputing and Libraries" which he developed and teaches on the postgraduate program of the Faculty of Library Science at Eotvos University, Budapest and at the School of Library Service of Columbia University, New York.

## 1. INTRODUCTION

Computers have been the companions of many librarians for some twenty years in the most well-off libraries of industrialized countries. Those who can afford them have been using cataloging utilities, national and worldwide online database services, have purchased mainframe or minicomputers to implement in-house acquisitioning, cataloging and circulation systems or have relied on the computing facilities of their parent institute for such library automation services. Still, the overwhelming majority of libraries who cannot afford the related expenses or do not have the infrastructural prerequisites for reliable and routine communication with online utilities, have been only spectators in the library automation arena. Even the players got only a limited exposure of the real computer environment, represented by a few terminals, modems, cables and printers. Even those who have their own in-house computer center have been only interacting with computers and computer readable materials rather than living together with them. The computer center has its own staff to select, acquire, install, maintain and operate the hardware and software system with data files, to purchase and update system manuals. Computer users mostly use the document collection of the computer center and turn to the library only for computer books and magazines which fare well with other monographs and serials in terms of acquisitioning, cataloging and reference requirements. Should a patron require a system manual or a statistical data file, he/she is certainly referred to the host computer center. The relationship with computers, computer readable materials and computer users is typically of remote and occasional nature. The extent and intensity of the relationship varied from library to library, from occasional dating (doing some online searches) to going steady (accessing one's own catalog via RLIN). This relationship is changing dramatically.

Computers in the form of micros moved into thousands of libraries to become live-in partners, bringing along their dowry: computer readable materials and an increasing group of the wedding party: computer-minded patrons who keep requesting information about computer products. Patrons who themselves may be ad-hoc users of online consumer information services expect librarians to search online via professional services to locate information. Patrons might want to consult computer readable versions of encyclopedias or A/I journals. Others would like to borrow software from the library for use on their own micros much in the way they borrow videocasettes for their home video. Microcomputing has enormously expanded the computer users' club. It is not anymore the exclusive domain of engineers, programmers, statisticians. Many new patrons join the library just to read about, try out or borrow software. These phenomena result in an enormous increase of demand for computer-literate librarians. Though many library schools incorporated library automation, online searching, programming and library system analysis into their curriculum in the past decade, these cannot prepare librarians completely to cope with this new kind of relationship. Most library automation courses concentrate on computers as a tool of library services. It is now as much important to emphasize microcomputing as the subject and as the object of library service in order to prepare librarians to live comfortably and knowledgably with the new microcomputing media and with the requirements of the new type of clientele. Library schools have to respond to this pressure by updating/expanding their existing library automation course offerings, or by introducing a "Microcomputing and Libraries"-type of course if they had not

offered one yet because of the belief that it would be merely an exercise in futurology in the prevailing environment. A model course on "Microcomputing and Libraries" has been developed and tested in practice by the author, and will be reviewed here.

## 2. STRUCTURE AND CONTENT OF THE COURSE

There are four main modules of the course. The first one lays the foundation for the remaining three, which can be sequenced in any order. Table 1 provides the details of the curriculum:

A. Microcomputing fundamentals for librarians
   1. Microcomputer hardware
      a) Processors
      b) Storage devices
      c) Keyboards, monitors, printers, special peripherals
   2. Microcomputer software
      a) Operating systems
      b) System programs
      c) Application programs
   3. Microcomputer industry
      a) Hardware manufacturers
      b) Software producers and publishers
      c) Dealers and user groups

B. Microcomputing information sources
   1. Printed sources
      a) Books, conference proceedings
      b) Journals, magazines, newsletters
      c) Directories, catalogs, guides
   2. Online sources
      a) Professional information services
      b) Consumer information services
      c) Computer bulletin boards

C. Software and other computer readable materials (CRM) in the collection
   1. Acquisitioning of software and other CRM
   2. Cataloging of software and other CRM
   3. Circulation of software and other CRM

D. Microcomputers for library automation
   1. Need analysis and feasibility study
   2. Software for acquisitioning, cataloging, circulation, reference functions and general applications
   3. CD-ROM databases for collection development, cataloging and reference services
   4. Product selection, implementation and operations

Table 1. Curriculum of the model course

### 2.1 MICROCOMPUTING FUNDAMENTALS FOR LIBRARIANS

Microcomputer hardware and software should be discussed from the practical aspects, rather than from the theoretical ones which may have no direct relevance for librarians. Knowledge of differences in operating requirements of application programs is much more important than fluency in converting hexadecimal numbers to binary ones and vice versa. Hardware and software are always covered in library automation courses, though too frequently with an academic flavor, which is rather discouraging for librarians. In addition, there is a third element of this module which is hardly ever discussed, though it is indeed relevant for librarians. This is the structure and modus operandi of the microcomputing industry. Librarians are usually familiar with the book trade, they should also be taught who are the players of and what is the product chain in the microcomputing industry.

### 2.2 MICROCOMPUTING INFORMATION SOURCES (SUBJECT ASPECT)

The need for information about computer hardware, software, applications, industry figures will increase parallel to the prevelance of personal computers. The need will not be confined to special libraries. Librarians of public, academic and even school libraries will have to provide reference services on these issues and to assist their patrons in identifying and using the adequate printed and online sources. They should know the scope and subject coverage of the major trade magazines, the structure and content of software and hardware directories, abstracting/indexing journals and those of the microcomputing-oriented online databases. It is taken for granted that a librarian is familiar with Bowker's Books in Print series. Time will soon come when librarians will be expected to use Bowker's Microcomputer Hardware and Software Guide both in printed and online form with the same ease and competency.

### 2.3 COMPUTER READABLE MATERIALS IN THE COLLECTION (OBJECT ASPECT)

Microcomputers, CD-ROM players, floppy disks and compact disks will be as common items in libraries as videorecorders, LPs and cassettes are today.

Assisting patrons in operating the public access microcomputers with various software and computer readable data files distributed on floppy disks, optical disks, magnetic strips, etc. is most likely to be a competency learnt on the job. However, acquisitioning, cataloging and circulation of computer readable materials may and should be taught to librarians in education and training courses.

They should learn how to select materials adequate for a specific hardware-software environment. Requirements of application software (e.g.: type and version of operating system, size of random access memory, type of floppy drives and graphic cards, etc.) must be clearly understood by librarians, who should read and interpret this information with as much ease as the verso of books.

The purchasing of software offers some alternatives. Librarians should know the pros and cons of mail ordering versus buying from dealers or publishers; the tricks of the trade in purchasing upgrade versions at reduced rates, obtaining discount for site licensing, and receiving free demo versions for prior evaluation. Acquisitioning of computer readable media is more difficult than buying videotapes, where all one has to know is whether the tape should be for a VHS or Beta videorecorder.

Cataloging of computer readable materials also poses some problems for which librarians should be prepared. At this moment there is no ISBD for computer readable materials. As a commentator of the draft being prepared I feel that even the final text will leave much room for education and training in cataloging computer readable materials. Although AACR2 incorporated a chapter about machine readable files several years ago, there is still no consensus in many respects. Furthermore, related rules of AACR2 will certainly be modified on publishing the ISBD. There are guidelines, rule interpretations, collections of sample descriptions, but live teaching is also needed in this field.

Circulation of computer readable materials provides some specific challenges, too; these include both technical and legal matters. In many respects the former ones are similar to those encountered with more traditional A/V media (adequate physical handling and storage, checking, identification of media), but there are also some peculiarities (merging, copying files, making backups, checking the integrity of returned software). Legal rules to be observed put an extra burden on the shoulder of librarians who should be educated about the implications of unauthorized copying, the extent of downloading privileges to qualify as fair use, and also about the technical options available for the protection of software and dataware locally consulted or borrowed by patrons.

Compact disk databases have their additional peculiarities. Are they books, serials or services? Which fund should cover their relatively high acquisition/subscription cost? They are usually licensed not bought, and have to be returned at the end of the license period. Should their print counterparts be cancelled or not? Librarians need orientation on these administrative and budgetary matters.

### 2.4 MICROCOMPUTERS FOR LIBRARY AUTOMATION (TOOL ASPECT)

This is the most well covered area by library schools, though most curricula tend to emphasize mainframe and minicomputer-based library automation. There is much in common, nevertheless microcomputer-based library automation has its own peculiarities. The most striking one is, that with a microcomputerization project the library which is far less likely to be able to justify the hiring of a consultant, will be left on its own. Consultants are of great help in preparing need analyses, feasibility studies, requests for proposals, in analyzing bids, and in acceptance testing. The purchase of a single function circulation system or a serials control program for 2000 dollars would hardly justify the hiring of a consultant, or necessitating elaborated bids from prospective vendors. Nevertheless, librarians ought to prepare a priority-ranked list of requirements, and evaluate various alternatives. They are to be prepared to formulate and rank their requirements, to know the options available, to understand system descriptions, and to pin-point pros and cons of a software or a database.

Librarians should be educated in planning, harmonizing and controlling microcomputer-based public services.

Much microcomputer software are available just for house-keeping functions. Reviewing software characteristics, comparing features, "walking through" demo versions could best prepare librarians for making educated choices.

CD-ROM databases for collection development, retrospective

and on-going conversion of catalog records and for reference services are increasing in their numbers. Librarians are to be educated as to how to evaluate such products in terms of scope, subject coverage, content, currency, searchability, ease of use, and cost.

### 3. METHODOLOGY AND COURSE PRESENTATION

Many library schools have been teaching library automation on a theoretical basis due to lack of or severe limitations of access to computers. Even the most well-off schools have to limit to some extent online practice and demo sessions for financial reasons. Relatively inexpensive online training and practice (ONTAP) files alleviated this problem, but the stress of demonstration syndrome, i.e. the fear that the system will likely to break down just when the class meets, is still with many of us.

Microcomputers with simulation and demo programs, floppy subsets of databases, real and sample CD-ROM databases are within reach of most library schools. And their use is absolutely essential for teaching this course on "Microcomputing and Libraries." Chalk and talk kind of lectures must be extensively complemented by laboratory works. Hands-on practice for students is a must in every phase of this course. The microcomputer at hand can be used to illustrate the hardware components, the operations with and on floppy disks, the most frequent commands of an operating system — to gain confidence rather than to learn the particularities of a given operating system. Free or very inexpensive demonstration programs and compact disks should be walked through to give students a flavour of command- and menu-driven systems, types of menu and screen arrangements, worksheet formats for data entry, prompting and help functions, etc. Floppy disk and compact disk versions of online databases most frequently used in teaching online search strategies can be used without limitation and the traditionally accompanying time and money pressure.

Microcomputing should be not only the subject of such a course but also the media and tool of teaching.

### 4. PARTICIPANTS, LOCATION AND DURATION OF THE COURSE

Librarians in all types of libraries will be exposed more and more to microcomputing. The implications will be felt by reference, acquisitioning, cataloging and circulation librarians alike and not only in the most developed countries.

Current and prospective library school students are as much interested in attending such a course as are practitioners. This means that the course outlined above may be offered in graduate, postgraduate and continuing education programs of library schools. It may take the form of a stand-alone course, or it may be absorbed fully or partly by other information technology courses in those schools which already offer such education and training programs. Others may prefer to incorporate modules or segment of modules of this recommended course into traditional, general courses on cataloging, reference services and technical services. There is no single best alternative; it must be customized with regard to the conditions prevailing at the given library school.

It is strongly recommended that the course be taught by and within the library school, because not computer science majors, but computer-wise librarians are to be educated and trained who can apply the acquired knowledge in the library setting. If the library school does not have (enough) competent staff, it should rely on guest lecturers coming from the library world. Delegating this course to the computer science department (if there is any) is not recommended, because "... many computer science instructors come from mathematical, engineering or business backgrounds (and) although they typically think of themselves as being involved with information, their views on the nature and manipulation of information may have very little relevance to library processes and needs" (1).

As regards the duration of the course, it again depends on the prevailing circumstances at the library school (type and duration of other library automation, information technology and computer courses, length of the master degree program, etc.). If it is a stand-alone course without any prerequisites in computing, systems analysis, programming, information technology and the likes, minimum 48 contact hours would be required. This can be reduced if students took relevant courses, for example in online searching where evaluation of online — and hopefully also CD-ROM — sources are supposed to be discussed fairly extensively. Therefore attention on this microcomputing course can be focused on the characteristics of specific databases rather than on general database evaluation and comparison criteria.

To sum it up: the duration of such a course must be determined with regard to the curricular environment, to the resource base available and to the level of knowledge and competence of prospective students. At Columbia University, participants of the course could access several microcomputers in the own laboratory and library of the School of Library Service, and this proved to be very conducive to learning. Given the above condition, and the study background of the students, it was reasonable to launch the course even in the somewhat shorter summer term. In spite of the unusually great number of students, the course could maintain its practical, workshop nature as each student received original demonstration programs with documentation for his/her own use in the lab.

### 5. CONCLUSIONS

Microcomputing keeps penetrating into more and more domains of our everyday life. Libraries will be expected not only to cater for the related information needs, but also to provide various computer readable materials from simple game programs to sophisticated spreadsheet software, from set of legally downloadable machine readable records to online searchable information sources. Librarians will want to facilitate their work by making use of affordably priced microcomputers, limitlessly and flexibly searchable CD-ROM databases. Microcomputers and computer readable materials will soon be such household terms as are VCRs, LPs and videocasettes today. Both practicing and prospective librarians should be prepared for and kept updated about new sources, formats and devices of information storage, processing and retrieval. The course described above aims at this, either as part of a (post)graduate program or of a continuing education program.

### REFERENCE

Wallace, D.P. and Boyce, B.R. "Computer Technology and Interdisciplinary Efforts: A Discussion and Model Program." Journal of Education for Library and Information Science 27:158–168 (Winter 1987).

IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division: Special Libraries

Section/RT: Art Libraries

1988

75-ART-3-E

# MEXICOARTE: a database, another alternative to study the art of Mexico,

by

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KEYWORD(S):

IR053719

For internal use only:

Meeting no.: 102

SI: YES/NO

MEXICOARTE: a database, another alternative to study the art of Mexico, by Elsa Barberena Blásquez.

The purpose of this paper is to report the importance, methodology, and results of the database MEXICOARTE.

## Introduction

There exists another alternative to study the art of Mexico besides visiting the country, by getting information and documentation through the database MEXICOARTE.

The art of Mexico has been acknowledged by Dürer,Baudelaire, the Surrealists and Henry Moore. From now on there will be more people interested in Mexican art, and more people will be reading books and articles not only in the English language but in Spanish and published in Mexico.

How old is this Mexican art?" three thousand years of Prehispanic civilization, four hundred and fifty years of colonial and XIXc artistic expressions. This art belongs to the New World which was under the four cardinal points: four destinies, four gods, four colors, four ages, four underworlds,four paradises. Every god has four aspects, every space four directions, every reality four faces.

The XVIc was the century of the destruction of the indigenous world but also of construction. A century of conquerors and missionaries, but also of architects and masons. Fortresses, convents, palaces, churches, open air chapels, hospitals, schools, aqueducts, fountains, bridges, were built on the ruins of Indian cities.(1)

The Moorish, Gothic, Plateresque and Renaissance styles took the place of Aztec, Maya, Toltec, Mixtec, Totonac, Olmec, Zapotectemples, palaces, pyramids, markets, houses, botanical gardens and observatories.

If you visit downtown Mexico City you will see the Aztec temples of 'Tlaloc' (the god of water) and 'Huitzilopochtli' (the god of war) at the West side of the Baroque cathedral.

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(1) Paz, Octavio. México en la obra de Octavio Paz. México : Fondo de Cultura Económica, 1987. p. 53.

The Baroque style in the architecture of the XVII and XVIII centuries surpassed that of Spain.

When Alexander von Humboldt named Mexico City as the 'The City of Palaces', - Boston was only a big town.

The Neoclassic style of the XIXc did not fit in with the prevailing state of wars,- invasions and a search for identity. At the end of it a big artist appeared, the engraver Guadalupe Posada, who according to Breton is the initiator of the - - humorous aspect in modern art as well as the one who begins the Mexican pictorial movement that is the forerunner of the Mexican muralists: José Clemente Orozco, Diego Rivera, David Alfaro Siqueiros, and Rufino Tamayo. These artists transformed the social Mexican revolution into an artistic one.(2)

But the Mexican muralists will have their counterpoint in a group of Mexican - artists who are not interested in the Mexican school of painting; abstraction, - conceptual art and, recently, figurative expression, have been incorporated by the younger generation to demostrate that pluralism is the contemporary language in - Latin America.

Another aspect is popular art which dates back to Neolithic times: Spanish, Chinese and Indian forms and influences were incorporated into an original - - creation.

The Latin American countries are unified by the Spanish language, but have also - many differences; communication among them is difficult because of the - - distances between countries and in general their governments are not interested in information, nor in its value. They depend on foreign sources which are not handling their information needs. These countries are considered rich in culture, but poor in information. The time has come to try to place these elements in equal balance.

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(?)Paz, Octavio, op. cit. p. 42,53.

The idea of the Mexican art database was born when the Art Section of the - - - Mexican Library Association (AMBAC) realized that Mexico did not offer its rich artist heritage by means of art information.

MEXICOARTE covers prehispanic, colonial, modern and contemporary art and - - architecture on a national basis. It contains records of different types: monographs, journal articles, exhibition catalogs, pamphlets, photographs and slides. It includes biographies or references to books where the biographies are published.

The database MEXICOARTE is listed in the SB/G Report on Data Processing Projects in Art.(3) and includes the following information:

| | |
|---|---|
| Institution responsible: | Asociación Mexicana de Bibliotecarios A.C. Sección de Arte (The Mexican Library Association -Art section). |
| Production: | Centro de Información Científica y Humanísti ca, UNAM (an information center of the Uni - versidad Nacional Autónoma de México). |
| Collaborating Institutions: | Instituto de Investigaciones Estéticas, UNAM, Instituto Nacional de Bellas Artes, CONACYT (Consejo Nacional de Ciencia y Tecnología). |
| Type of project: | Biography, bibliography, analysis of documents/ sources, indexing of documents/sources. |
| Subject matter: | Art. architecture, ceramics, collecting and collectors, costume, design, drawing, exhibitions folk art, furniture, glass, graphic design, - |

(3) Scuola Normale Superiore. Pisa, Italy or the Getty Art History Information Program. Santa Barbara California,USA.



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| | |
|---|---|
| | museums and galleries, painting, photography, posters, prints, sculpture, textiles, decorative arts, books and illustration, education, art theory and criticism, artists - - movement schools, conservation and - - - restoration, art libraries and art book collections. |
| Primary language of database content: | Spanish. |
| Features: | Automated publication, sdi services, primary document support |
| Hardware | HP 3000 |
| Software: | Minisis (originally) downloading to MICRO CDS/ISIS v.2 afterwards. |
| Computer language: | SPL (originally) Pascal |

Based on the above, the planning stages began in 1986. The decision to use the Common Coomunication Format (CCF) of UNESCO and the software CDS/ISIS v. 2 would standardize the information and would widen the availability of the database.

The Common Communication Format (CCF)

The Unesco General Information Programme (Unesco/PGI) sponsored an International Symposium on Bibliographic Exchange Formats, in April 1978 which was held in - Taormina, Sicily. Organized by the UNISIST International Centre for Bibliographic Description (UNIBID) in cooperation with the International Council of Scientific Unions Abstracting Board (ICSU-AB), the International Federation of Library - Associations and Institutions (IFLA), and the International Organization for -- Standardization (ISO), the Symposium was convened "to study the desirability and feasibility of establishing maximum compatibility between existing bibliographic exchange formats".

Out of the Taormina Symposium emerged a recommendation dealing with the development of a common bibliographic exchange format. Immediately following the Symposium Unesco/PGI formed the UNISIST Ad Hoc Group on the Establishment of a Common Communication Format (CCF).

The format has enabled the database MEXICOARTE to conform with the international standard ISO 2709, to include elements essential to bibliographic description identified in a standard manner, and to augment additional relevant descriptive elements such as the styles and periods of Prehispanic, Colonial, Modern and Contemporary art in Mexico.

In the case of the database MEXICOARTE information exists in a number of separate formats; there are organizations which want to exchange records, as is the case of INBA ('Instituto Nacional de Bellas Artes') the Mexican department of Fine Arts of the Office of Education, and the 'Instituto de Investigaciones Estéticas' at the National University. On this respect these organizations have agreed first upon a common standard format for exchange purposes.

The CCF will greatly facilitate, both technically and economically, the information exchange.

The variety of formats from which the database MEXICOARTE is taking the information have similarities, but they are not alike and their records cannot be handled by the same computer programs.

The bibliographic descriptions carried by these formats also differ widely because different kinds of agencies have created the bibliographic records. This situation has produced incompatible bibliographic records which need the uniformity given by the CCF.

The variety of formats and bibliographic records is detrimental to the aim towards building international networks of art documentation.

The CCF facilitates the communication of bibliographic information among - computer-based systems and the user will have easy access to the recorded - information of the art of Mexico.

The edition of the CCF used is the one published by Unesco in 1984. For the database MEXICOARTE a data record was chosen (ANNEX 1) which consist of the following data elements:

| | |
|---|---|
| 020 | source of record |
| 021 | completeness of record |
| 040 | language and script of item |
| 060 | type of material |
| 100 | international standard book number |
| 101 | international standard serial number |
| 120 | document identification number |
| 200 | title and associated statement (s) of responsibility |
| 240 | uniform title |
| 260 | edition statement |
| 300 | name of person |
| 310 | name of corporate body |
| 320 | name of meeting |
| 400 | place of publication and publisher |
| 420 | place and name of distributor |
| 440 | data of publication |
| 460 | physical description |
| 480 | series statement |
| 490 | part statement (volume/part numeration and designation) |
| 500 | notes |
| 600 | abstract |
| 610 | classification scheme notation |
| 620 | subject descriptor |

The Sofware CDS/ISIS v.2

CDS/ISIS Pascal is a programming language designed to develop CDS/ISIS - - -

applications requiring functions which are not readily available in the standard package. The language itself is a subset of standard Pascal.

The specificity of CDS/ISIS Pascal is in fact its library of predefined procedures which provide access to most CDS/ISIS functions in a convenient and simple manner.

Furthermore, in addition to providing you with a powerful and high level interface to the CDS/ISIS software, the CDS/ISIS Pascal library will make your programs - - independent from the version of the system you use and give you the security of - using well tested functions.

CDS/ISIS Pascal is an integral part of CDS/ISIS and consist of a compiler, an - - interpreter and a library.

The software was chosen because of the following characteristics:

1. It is a friendly system which permits an effective dialogue. Art historians and critics do not have specific knowledge about the automation of information. The retrieval of information has to be as quick as possible.

2. The program has to offer different types of presentations for example catalogues by different artists, styles, objects, art forms, documents, organizations.

3. It is necessary to foresee the size of the database not only as a reference tool for research, but to serve inventory purposes as well.

4. The system has to be compatible with other systems which will be used in - libraries, information and documentation centers and museums.

5. The system should permit art historians and critics to minimize routine work in order to direct all their efforts to creative research.

6. The system has to be considered as the memory of the art historian and critic.
7. Finally the system needs to contemplate a Mexican art network.

The main features of networking are:[4]

1."Free interchange of information".
2."Cheapness because collective processing of information".
3."Greater ease in collaborative projects".

The bibliographic information in a network will provide a verbal account of art works and with the aid of thesauri will allow for better intellectual control - of databases.

Thesaurus

The thesaurus of MEXICOARTE is an attempt to provide a national system for the description and subject analysis of art documentation related to the art of - Mexico and published in the country.

The database MEXICOARTE does not have a thesaurus in conformance to the - - - standard ANSI Z39 and ISO 2788 with full thesaurus reference structures of "use" UF BT NT RT, but a computer file of all subjects used with cross reference and - - including personal and place names in alphabetical order. It is available for the use of the editorial staff.

The problem of subject indexing in art and architecture also prevails in - - Mexican art. Subject indexing in the art of Latin America is poor. Indexing of - periodicals occur at the individual level and almost all the editors index their data manually.

Cooperative indexing also in a manual form is the result of the following titles:

1) HAPI (Hispanic American Periodicals Index) published annually since 1975 by the Latin American Center of the University fo California in Los Angeles; it includes Anales del Instituto de Investigaciones Estéticas, Artes de México Artes Visuales, Revista de Bellas Artes, and México en el Arte.

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[4] Greenhalgh, Michael. "Small databases for art historians: Why use a computer in research". AICARC Bulletin. (2/1986 & 1987) p.52.

2) The Handbook of Latin American Art, edited by Joyce Bailey of Harvard University, vol. 1 Prehispanic, vol. 2 Colonial, Vol. 3 part I and II, Modern and Contemporary, and published by ABC Clio Information Services in 1984.

3) Index to Art Periodicals compiled in Ryerson Library of the Art Institute of Chicago , published by Hall in 11 volumes from 1907 through 1962. México en el Arte is the only publication listed.

4) Index to Latin American Periodicals: Humanities and Social Sciences, prepared by the Colon Library of the Organization of American States and published by Scarecrow from 1929 through 1970. The following periodicals are included: Anales del Instituto Investigaciones Estéticas, Arquitectura, Ars, Boletin del Buró Interamericano de Arte, Cuadernos de Bellas Artes and Revista de Bellas Artes

5) The Arts & Humanities Citation Index, published by the Institute for Scientific Information included the magazine which has ceased publication: Artes de México.

6) The Handbook of Latin American Studies compiled and published by the Library of Congress.

Art Index and Art Bibliographies Modern do not list Mexican art periodicals because of their lack of continuity, and although they include documentation published in English, the art of Mexico is poorly covered.

At the national level there exist several efforts:

1) Catálogo Bibliográfico de Teoría e Historia de la Arquitectura en México published by the 'Instituto Nacional de Bellas Artes' from the Office of Education in 1982. It includes books and periodicals but the bibliographic references are often incomplete. It works as a union catalogue because each item indicates the library where it can be found.

2) Bibliografia del Instituto de Investigaciones Estéticas (1935-1965) by Danilo

Ongay Muza. México,D.F.: Instituto de Investigaciones Estéticas, UNAM, 1966. 149 p.

3) Dos Décadas de Trabajo del Instituto de Investigaciones Estéticas; Catálogo de sus Publicaciones, Indice de sus Anales. México,D.F. : Instituto de Investigaciones Estéticas, UNAM, 1957. 64 p. (Supplement no.2 of Anales del Instituto de Investigaciones Estéticas,no. 25).

4) Los indices a Revistas: el caso de los "Anales del Instituto de Investigaciones Estéticas", 1937 - 1983. by Luis Rodríguez Serafín. México, D.F. : Facultad de Filosofía y Letras, UNAM, 1987. (Thesis).

5) Indice de "Artes de México" nos. 1-60, by Elsa Barberena Blásquez, México,D.F.: Instituto de Investigaciones Estéticas, UNAM, 1982. 301 p. (Cuadernos de historia del arte, 22).

6) Indice completo de la Revista Cuadernos de Bellas Artes. 1960-1954. México,D.F.: Instituto Nacional de Bellas Artes, 1964.

7) Indice del Suplemento "México en la cultura" (1949-1961): Estudio preliminar, by Julia de la Fuente, Gabriela Peyron, Luz del Carmen Valcarcel. México,D.F. : Universidad Iberoamericana, 1985. (Thesis)

The following item is a Mexican magazine whose index was done and published in the United States:
Indice de la "Cultura en México" (1962-1972), by Alfonso González. Los Angeles, CA: Latin American Studies Center. California State University, 1978.452 p.

Thesauri for visual art collections (pictures,photographs, slides) are non existent.

There is a need to cover art terms as well as visual images ( description of the contents of pictures which are iconographical in nature).

Up to now the thesaurus is obviously a rough working copy of art terms which has followed the Library of Congress Subject Headings, Art Index, and RILA, and the Spanish headings compiled by Carmen Rovira of the Organization of American States and Gloria Escamilla from the National Library of Mexico.

The existing term lists have not been successful in providing a comprehensive standardized vocabulary for Mexican art and architecture.

The result of the thesaurus of MEXICOARTE is an alphabetical system by which to search the database. Its format resembles an alphabetical library subject authority file with 'see' and 'see also' references, arranged by broad category: such as painting, religious architecture, sculpture, and under these categories is an alphabetical array of terms relating to that category.

'See also' references:

ARQUITECTURA RELIGIOSA
Véase también:
- Capillas
- Catedrales
- Conventos
- Fachadas
- Iglesias
- Santuarios
- Templos

PINTURA
Véase también:
- Acuarela
- Miniatura
- Pintura mural

The above system facilitates the use of the alphabetical list alone on which, except by chance, only if you know the word you are looking for you can find it, and it also prevents too much material appearing under one heading, much of which might be irrelevant to the individual researcher.

The differing meanings of the words used in architecture have been treated with great care and are listed as 'see' references:

PORTADAS
Véase:
FACHADAS
'Portada' in Spanish is the ornamentation of the facade and it also means the title page of a book.

The level of specificity is deeper only in the areas where material is abundant. For instance a specific type of furniture is listed under the general category - MOBILIARIO.

Bibliographies and exhibitions are treated as primary and as secondary terms:

EXPOSICIONES
(implies of several artists)

RIVERA, DIEGO - EXPOSICIONES
(implies exhibitions only of Rivera's work)

BIBLIOGRAFIA
(implies of several styles, epochs and techniques)

ARQUITECTURA - BIBLIOGRAFIA
(implies architectural bibliography only)

The main subdivisions by styles: Prehispanic, Colonial, Modern, and Contemporary have solved the problem of including these subheadings each time. If you are - interested in facades of contemporary churches, you can draw the subject headings: FACHADAS (facades) IGLESIAS (churches) ARQUITECTURA RELIGIOSA (religious - - architecture) plus the initials COT for contemporary.

The AAT (Art and Architecture Thesaurus) of the Paul Getty Foundation has - - considered this subdivision or facets by styles and periods under Prehistoric Middle American and South American, Historic Native Middle American, and South - - American, Colonial Central and South American, Modern Central and South American - (if these subdivisions are related to the geographical location of the countries,

Mexico will be excluded because it belongs to the North American Continent), - International Post 1945.

The indexes studies provide a large base of terms from which to draw although there are some variations: 1) In Art Index the reproductions of a specific artist are listed after the name of the artist, under 'reproductions'. In the database MEXICOARTE they can be drawn using the number 155 besides being listed by the artists' name alphabetically: 2) this same index does not list the names of - painters, sculptors, architects by groups.

In the database MEXICOARTE the different professions have the name of the artist:

| PINTORES | ESCULTORES | ARQUITECTOS |
|---|---|---|
| Cuevas, José Luis | Felguerez, Manuel | Barragán, Luis |
| Orozco, José Clemente | Escobedo, Helen | González de León, Teodoro |
| Rivera, Diego | Sebastián | Ramírez Vásquez, Pedro |

In this manner it is very easy to find who are the artists included and you do not have to know all the names in order to find information.

The data on the artists includes birth and death dates.

New terms are constantly being added. Terms not found are researched and chosen by the editorial staff. The list of subjects consists of about 300 terms.

The editorial staff is very small: one half- time researcher, in charge of the - database, and one half-time librarian in charge of inputting.

The computarization of Mexican art information raises some serious problems
- plenty but still incomplete information
- difficulties in financing the project.
- the distribution of the acquired information.

- the feasibility of combining visual and textual information at a later date.
- some reluctance to make data available.

Despite the above mentioned problems, I am convinced that Mexican art historians and critics as well as researchers interested in the art of Mexico will have a powerful reference tool in the near future.

Mexico City, April 1988.

FORMATO FAVOR DE USAR MAQUINA DE ESCRIBIR O LETRA DE MOLDE ANNEX 1

Microformato_____

Elaboró_____ Núm. doc. 120 A_____

Tipo de Doc. 060_ _ A_____ idioma 040_ _ A_____ fuente 020_ _ A_____

Integridad del reg. 021_ _ A_____

Autor 3 - - - _____

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Tít. 200_____
y Men. Aut. /_____

Tít. 240 Tít. de la revista_____

Edición 260_ _ _ A_____ Fecha de pub. 440_ _ A_____

Lugar de pub. y
editor 400_ A_____

Lugar y nombre
del dist. 420_ _ A_____ [illegible] 430_ _ A_____

Desc. F 460_ _ A_____

Vol. y núm. 490 Z_____ ISSN 101_ _ A_____

ISBN 100_ _ A_____ No. de clasificación 610 A_____

Notas 500_____

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Resumen 600_ _ A_____

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Descriptores 620_ _ A_____

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# AUTOMATED MAP RETRIEVAL

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## ABSTRACT

Several attempts were made recently to improve map retrieval systems in large map libraries. This paper outlines the links between basic model of cartographic communication, complexity of geographical information systems and their accessibility. Since libraries introduced machine readable cataloguing systems there has been growing concern over how to include maps and spatially rerenced data into these systems.

The user requires very special consideration in design of such systems. Maps and geographical information is used by wide range of individuals with different backgrounds and different needs. Maps published in series have created the largest problem so far in automated map cataloguing.

Successful launch of CARTO-NET in the UK has proven that there is a way of approaching the problem of automated map retrieval with multileveldata structure and graphic on screen data search.

Every day more geographic data becomes available in digital form. Spatially Referenced Information Systems (Land Information Systems, Geographic Information Systems, digital mapping and other digitally stored geographic information) are produced by government agencies and commercial institutions.

Incorporation of the records regarding these systems, which

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replace traditional maps in some areas, is vitally important. It is acknowledged that careful consideration has to be given to a user in this process. Only user driven product have a chance to succeed nowdays. Geographers, geologists, members of other professions and members of the public need to utilize data in map and other spatial forms as a tool of their research. This includes various maps in traditional form (thematic and topographic), remote sensing imagery in photographic and digital form,computer databases containing mapping and statistical information, maps (and related to earth sciences data sets) on CD-ROM and videodisc.
The paper discusses a wider approach to automated map retrieval in light of transformation of traditional map library from a map room into an integrated geographic information centre.

# AUTOMATED MAP RETRIEVAL

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"Reference is after all the central function of a map collection". This statement by Dahl summarises major function of any map library. In order to facilite for fast and efficient reference service a number of approaches have been made to design automated retrieval and management systems (eg. CARTO-NET, the system developed at the University of Edinburgh for the British Library). User requirements play also a significant role in the process of information retrieval. Thus, careful consideration has to be given to assessment of users expectations and ones ability to consult an automated map retrieval system. Thirdly, as more cartographic material becomes available in digital form, it has to be considered how to incorporate it into automated map retrieval systems.

## Map Retrieval Systems

Maps in series form a significant proportion of any contemporary map collection. It is a problem to maintain accessible records of map series in almost every map collection. Large map collections have been maintaining extensive accessioning, catalogue and other user-access records including pictorial index maps.

Since libraries introduced machine readable cataloguing systems such as MARC there has been growing concern over how to include maps into these systems. Unfortunately maps,

as non-book material, originally received limited consideration.

There have been several attempts to encourage more extensive use of computers in map cataloguing. The Library of Congress and other major libraries and bibliographic networks (databases) already make their map-cataloguing records available in a machine-readable (computerized) form. The problem remains that maps in series are most easily accessible by a data retrieval process through their index maps.

It is suggested that use be made of an interactive graphic design computer system to control maps in series, using the combination of an alphanumeric database with a digitized set of index maps. As has been published before (I. Watt, T. T. J. Browne 1985) most large institutions (which are most likely to have map collections), invariably have access to a large computer, eg. have Digital-VAX main frame computers, which could be replaced by released in 1987 MICRO-VAX computers.

Two alternative systems are proposed. One is designed for INTERGRAPH-VAX computer system, the other is a conversion for an IBM-PC compatible with a hard disc back-up. INTERGRAPH software offers a wide range of packages including IGDS (an Interactive Graphic Design System), and WMS (World Mapping Sustem), which allows us to create a permanent graphic-based database following the principle structure of

Geographic (or Land) Information Systems. As there are numerous regional surveying and cartographic standards and regulations, the geographical co-ordinates (latitude and longitude), are key variables in the data control process. Multiplicity of levels and memory capacity in handling extensive databases favours the INTERGRAPH-VAX combination to be used for such applications. Economy factorsdictate the need for data conversion into a smaller or PC-based system, as the cost of permanent access to an INTERGRAPH workstation appears to be high. Still the interactive data retrieval in a graphic form on the CRT has to be retained.

There are numerous approaches to computerized map cataloguing (Larsgaard, 1987) but none of them considers the spatial computer system. It is suggested that existing methods of cataloguing maps (eg. AACR2) be combined with a spatial database. It has been noted before, and is widely known amongst Map Curators and Map Cataloguers, the AACR2 does not cater for proper cataloguing of map series, as it rather limits their accessibility.

I do not aggree that maps in hard copy will disappear soon. There will still be constant demand for traditional maps in series, either topographical or thematic. Map Curators will have to cope with the need for access to particular maps to meet users requirements.

Utilization of a spatial database in conjunction with an alpha-numeric database seems to be the best solution for graphic access to full information about map series held in the colliction. For example, there are numerous topographical nd thematic map series for Australia published by the official Commonwealth and State bodies. A Uniform Australia wide sheet numbering system for the various scales has been adopted. This information digitized over an outline geographical map of the continent, with each rectangle representing a particular sheet, is linked with and alphanumeric database. This alphanumeric database is an extension of the basic catalogue records for map series and consists of a large amount of information, such as: sheet numbers, names, geographical co-ordinates, main geographical name (as key-words), etc. Fields are allocated for each varialbe. This enables easier manipulation and accessibility of data.

The result is that the Map Curator, and most of all the user can access and locate a map and information about it via two alternative channels. Firstly, by searching through an alphanumeric database, but only if accurate information about the particular geographical location is known to the searcher.

Secondly, using an interactive graphic computer system, which gives the opportunity to search tentatively, knowing only the approximate geographical location of the area searched for.

The extension of a database to a 2-dimensional graphic sphere creates the opportunity to abandon very inconvenient, large

in many cases inconsistent index maps to the map series. These are the biggest pain of any Map Collection.

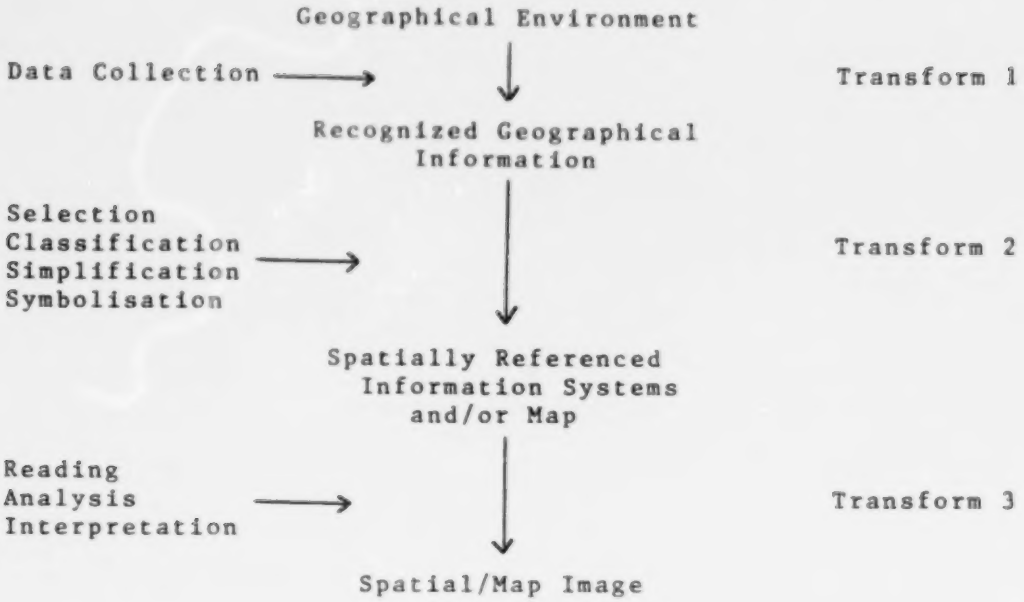
Incorporation of such a database, would also help enormously with proper maintenance of accessioning records. This can be easily achieved by a simple extension of the appropriate field numbers. The same applies to multiple editions of particular sheets. This would relieve map collection staff fromlabourious maintenance of accessioning records.

User Interaction

Geographers, geologists and members of other professions need to utilize data in map and other spatial forms as a tool of their research. This includes various maps in traditional form (thematic and topographic), remote sensing imagery in photographic and digital form, computer databases containing mapping and statistical information, maps (and related to earth sciences data sets) on CD-ROM and videodisc.

The simplified model of cartographic communication process illustrates clearly important stages of data transformation.

MODEL OF CARTOGRAPHIC COMMUNICATION




An automated map retrieval system is in fact designed in similar manner as any other SRIS (Spatially Referenced Information System). A. Turk defined the SRIS as the interactive information system containing data relating to spatial distribution of objects with an output in digital, alphanumeric or graphic form. The key elements of the system are:

- data
- hardware
- software
- people
- procedures (how to operate the system efficiently).

The information about map coverage of an area is regarded as a recognized geographical information.

Therefore, in a process of transformation into the SRIS it is exposed to following factors:

- selection
- classification
- simplification
- symbolisation

The selection and classification of the material is usually predetermined by the contents of material included in the catalogued collection. While designing an automated map retrieval system one has to consider user needs as well as user's ability to recognize provided information, especially if information is produced in form of a map appearing on computer screen. It is necessary that graphic output meets acceptable cartographic standards. Even though the development of computer graphics technology has advanced very far it still requires a map designer to device a correct, readable graphic output.

Identification of user requirements is a key factor in map design and it is equally important in a design of any other database system with graphic output at the end.

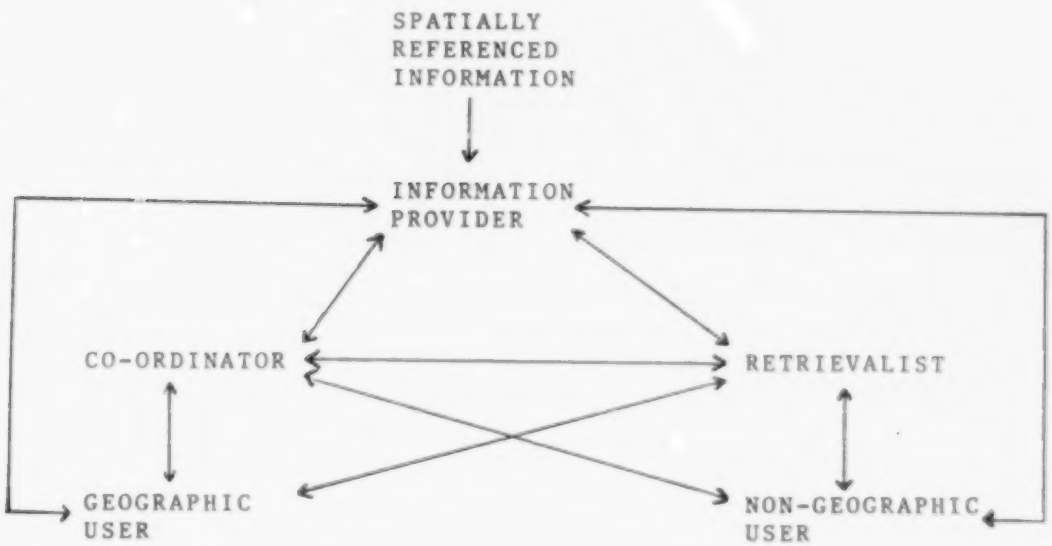
## Role of Automated Retrieval Systems in Distribution of Geographic Information.

Currently many institutions using cartographic and remote sensing data purchase large datasets for specific projects which then end up being not used again. A similar problem occurs with databases developed by those institutions which

in many cases are not publicised enough and confined to one institution, or to one branch of the institution. This way access to them is limited.

Geographic and Land Information Systems have become popular not only among geographers, surveyors and environmental planners. Intensive research to develop more sophisticated systems have been largely supported by governments.

DISTRIBUTION OF GEOGRAPHIC INFORMATION




The proposed model could be applied to all kinds of geographical data, their storage and retrieval including a variety of hardware and software requirements.

The rationalisation of geographic and spatial data resources could be achieved at various levels:

- . institutional
- . regional
- . state /federal
- . international ...

by application of the proposed model in practical terms. Sound corporate plan would need to be developed at the initial stage. Possible amalgamation of the existing data-sets (such as digital data sets and/or map collections) is highly desirable, which raises the problem of creating one more information network.

The proposed database may in the future become a major source of information on existing GIS/LIS data.

Spatial data handling and Map and Spatial Data Use have become very popular subject. An enormous funding and a lot of research has been put recently in this area, but now we need to ensure that all this will utilised in geographical research to its full potential.

It is very positive that GIS/LIS systems are becoming better and more user friendly. That they can handle larger and larger volume of data and that final output whether it is in digital or graphicform represents much better standards.

Now it is the time to ensure that the information about existing and future (planned) information systems will reach all the interested parties. Arrangements for easier and more costeffective data and system exchange would also have to be made.

Integrated geographic information centres would be able to provide more efficient service and the information will be availiable from a predictable place. The increasing volumes of data becoming available in various forms require appropriate information management. This can only be provided effectively when a centralized approach to information distribution is maintained. It applies at least to the information regarding availability of geographical and related data.

Regional Integrated Land Information Systems are being developed all over the world. Hard copies of serial maps are in most cases the primary land-data source. It is very important tomaintain records of mapping activities at global scale as well as regional, therefore such a system can become in the future a part of a larger Land Information Systems.

Rapid development of the computer graphic technology will advance the chances of such a system being more widely used in map libraries and Land Information Centres.

Further miniaturisation and reduction of cost of CD-ROM applications would allow use of this format for publication of interactive computergraphic catalogues of maps.

## Conclusion

The advantages of an Interative Graphic Computer System for indexing map series, as a means of enhancing the rather poor cataloguing of map series, are clearly visible.

As map series make up about 70% of any larger map collection improvements are needed in their bibliographic accessibility and record keeping. Hopefully map libraries will have greater access to computer graphic technology for further development of such systems. There is also a need for a change of approach by cataloguers, especially those responsible for standards and procedures.

Increasing access to Spatially Referenced Information Systems and their inclusion into map collections holdings will soon transform traditional Map Rooms into Geographical Information Centres. Our role now is to ensure that we are ready for it.

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IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division: SPECIAL LIBRARIES

Section/RT: Geography and Map Libraries

1988

83-GEO-2-E

# WILL YOUR LIBRARY BE THE SPATIAL DATA INFORMATION CENTER OF THE FUTURE?

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KEYWORD(S):

Digital Spatial Data

Geographic Information Systems

For internal use only:

Meeting no.: 139

SI: ~~YB6~~/NO

IR053719

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# WILL YOUR LIBRARY BE THE SPATIAL DATA INFORMATION CENTER OF THE FUTURE?

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## ABSTRACT

In the earliest days of recorded civilization, people pressed square-ended styluses into wet clay to record information. Today they press square keys on a computer keyboard. Vast amounts of data about the Earth and man's activities are being entered into digital spatial data bases. These data have been structured so that they are described in terms of their exact geographic position on the Earth. The data, in the form of points, lines, or polygons, can describe geology, soils, water, forest cover, or population statistics. To use these data, geographic information systems (GIS's) are being developed to collect, inventory, manage, analyze, and display the spatially referenced data sets. These systems will handle both raster (grid cell) or vector (line segment) data and allow the use of knowledge-based software to emulate the problem-solving process of the human brain. By having access to spatial data and the accompanying GIS and knowledge-based software, librarians will be able to expand their reference services to handle such questions as: What did this area look like 50 years ago? Do you have a map of my house? Where are the water pipelines located? How can I find out how many children in my neighborhood have had measles? Where are the sources of environmental pollution near my house? What kind of trees surround my village? Where can I find fresh water in the future? or What would happen to the transportation system in my city if there was an earthquake? Because the library has been the center for

published information through time and is the one place where all disciplines can truly live together, people will expect to find spatial data there also. The biggest problem in establishing this type of library system may be in just getting the approval to start. Because the data and the systems are now available is there any wonder that I ask, Will your library be the spatial data information center of the future?

## INTRODUCTION

In the earliest days of recorded civilization in Mesopotamia, people pressed square-ended styluses into wet clay to produce tablets of wedge-shaped or cuneiform letters. The tablets were then baked to preserve them. Some of these tablets have survived the centuries because they were placed in collections or libraries. As the nations of the world developed, so did their library collections. Whether on clay tablets, papyrus, parchment, or paper, the world's literature, history, records, maps, music, and art were collected and assembled for others to see, read, or study. Consequently, through these facilities whether national, public, or private; the collection, storage, and dissemination of information began and continues.

Today, however, humans press small square keys on keyboards that record symbols, letters, or instructions on rotating disks or drums inside computers. Now too, these same letters can be compressed and burned into materials with laser beams, so that thousands of pages of text can be placed on just one 13.3-centimeter disc. Information technology appears to be leading us toward information stored on compact discs or optical discs. Is your library studying these technologies?

Because the library has been the center for published information through time and is the one place where all disciplines can live together, people will expect to find electronic information there also.

Hasn't this been true for records, film, microfilm, microfiche, and videotape?

Perhaps the most exciting technology that can help move the library into the field of electronic information is the emergence of digital spatial data sets and the development of geographic information systems (GIS). These systems and data sets can be applied to hundreds of commonly asked questions at library reference desks. How many times have you been asked the following questions: What did this area look like 50 years ago? Do you have a map of my house? Where are the water pipelines located? How can I find out how many children in my neighborhood have had measles? Where are the sources of environmental pollution near my house? What kind of trees surround my village? Where can I find fresh water supplies in the future? or What would happen to the transportation system in my city if there was an earthquake? In the past this type of information was scattered in specialized offices and departments and could not be easily brought together and interrelated. As microcomputers continue to decrease in price and increase in storage capacity, and as software becomes available to handle the data, libraries will become the logical places to seek answers to these questions. Will your library be the spatial data information center of the future?

## SPATIAL DATA

Information about the Earth and man's activities becomes spatial data when the features or activities are described in terms of their exact geographic position on the Earth. The data can consist of points, lines, or polygons of information and are usually heterogeneous. The data can describe geology, soils, water, forest cover, land use, or population statistics. They can be of varying scales, dates, accuracies, and areal coverage, but because they are topologically

structured, they can be related to each other. The data can come from maps, photographs, geocoded data bases, or remote-sensing systems. Because the data can represent text or statistics as well as geographic information, geographically referenced features can be integrated with independent variables such as size, color, accuracy, extent, or cost.

With a fully integrated spatial data base a user can enter the system and ask "Where are all the areas at such-and-such scale, that are so many meters from the river, are above an elevation of 300 meters, are covered by spruce trees, have major roads crossing them, and have children between 5 and 10 years old living there?"

Spatial data comes from all surveying and mapping organizations. Engineering and construction firms building buildings or highways also generate this type of data, as do planning agencies and pipeline companies. In most countries your house has been geographically located, and the utility companies have records of where water, sewage, telephone, and electrical lines are located. All of these data are necessary to answer the many environmental and resource questions we face in the future.

To develop and load these spatial data bases, most organizations have begun to convert their geographic and statistical data into digital form. Using digitizers, computers, and plotting devices, spatial data can be stored, recalled, and plotted when necessary. Newer data can be electronically compared with older data for faster updating and revision, and data can be collected at one scale and plotted at another.

## GEOGRAPHIC INFORMATION SYSTEMS

A GIS is a computer hardware and software system used to collect, inventory, manage, manipulate, analyze, and display spatially referenced data sets. GIS's are emerging as major spatial data handling tools for

solving complex planning and management problems. They can also be the librarian's reference aid in the future.

To be used in a GIS, spatial data must be structured and organized. The two current major structures are raster and vector. In a raster-based system, the data are divided into square cells. The reference grid to keep track of these cells is based on a column and row relationship. Each cell is assigned a code describing the feature contained within the cell. Multiple data sets covering the same area will include different codes for the same cell, but these differences are integrated by the software so that you can store and display selected attributes or combinations of attributes.

In a vector-based structure, a series of x and y coordinates are used to describe each point, line, or polygon. In addition, information about the connections and relationships among the features is calculated and stored. Although this structure is more complex, it is being used extensively because of its greater inherent information content. In many systems, both raster and vector data can be interrelated through the computer's complex software.

## STANDARDS

Within the earth science and computer science fields the development of both the spatial data bases and GIS's is progressing rapidly. In addition the establishment of digital cartographic standards, both nationally and internationally, will allow the basic spatial data to be used by more than just the producing agency.

In the United States, in 1987, the Digital Cartographic Data Standards Task Force developed the "Proposed Standard for Digital Cartographic Data" by merging the draft standards published in 1986 by the National Committee for Digital Cartographic Data Standards and the Standards Working Group of the Federal Interagency Coordinating

Committee on Digital Cartography. The merged proposed standard was published for public review in the January 1988 issue of The American Cartographer. The proposed standard includes a specification for the transfer of digital spatial data and models for cartographic features and data quality.

## KNOWLEDGE-BASED GEOGRAPHIC INFORMATION SYSTEMS

To assist someone in learning how to use a GIS to access vast quantities of spatial data, efforts are underway to develop knowledge-based or expert systems. These systems emulate the problem-solving process of the human brain, and provide a logic menu to guide the user through the data. For example, if you wanted to know where to look for fresh water, the menu would indicate that you must bring together such factors as land ownership, land use, depth to bedrock, the saturated thickness of the sands and gravel, location of pollution sources, highway access, and demand. By having a list of all the contributing factors involved, even someone not trained in hydrology could find a proper solution. This development may well be the key to providing this type of service from a library.

## APPLICATIONS

With the right spatial data sets and a GIS, tomorrow's librarian will be able to find answers to the questions - -

- What did this area look like 50 years ago? - After describing the area with coordinates or place names, the data base is searched for historic maps that may be in the data base as scanned images or as digitized vector data. Aerial photographs of the area might also reside in this file.
- Do you have a map of my house? - After describing the location of the house by street name or coordinates, a list of data-base

coverage is shown on the screen and an appropriate map is selected. A color electrostatic printer makes a copy of the map in a few seconds. The customer might also construct an appropriate map by compositing the basic map data layer by layer. Thus, if you don't want the hydrography, you can eliminate it from your map.

- Where are the water pipelines located? - After checking the system's menu, you discover that all the city's pipeline locations have been digitized and you simply superimpose the pipelines on the transportation map of the area of concern. If the system is very advanced, you may even be able to call up the surveyed plat for your property and overlay the water pipeline locations on it.
- How can I find out how many children in my neighborhood have had measles? - After locating your neighborhood on a map on the screen, you then call up the latest census data to locate where the children live. Then you call up the health statistics that were entered as spatial data. After selecting a color scale you can produce a map showing where these variable coincide.
- Where are the sources of environmental pollution near my house? - By going through the data base, you can highlight all of the previous and current industrial sites. From the environmental files, the records of water samples can be superimposed on the screen and patterns can be highlighted. After identifying outfalls and point sources, you can then print a map and go to the field to check what you found.
- What kind of trees surround my village? - By going directly to the land use/land cover files, you can display the areas of

deciduous and coniferous forests and even look back at the historic data to see whether the patterns have changed.

- Where can I find fresh water supplies in the future? - First you enter the system through the knowledge-based software to find out what factors you will need to know to find an answer to the question. Once the list is complete, you call up each data layer and, through a process of elimination, you determine where it would be most appropriate to drill. To arrive at the solution, you will have defined the area, checked the current land usage, identified possible sources of well pollution, determined the depth to bedrock and the coarseness of the sand and gravel, and determined the access routes and current ownership.
- What would happen to the transportation system in my city if there was an earthquake? - After locating the map of your city you highlight all the transportation systems using the appropriate feature code in the data base. Then you overlay the geologic information, including the faults and ground liquification factors. Using a model built into the GIS, you simulate a magnitude 6.8 earthquake and the amount of slippage and movement is calculated and each point on the transportation route that is affected is highlighted in color. You can then adjust your time and travel model to determine alternate routes to fire stations, hospitals, and emergency shelters.

## CONCLUSION

How far off are systems like this? Not very far at all. In fact, all the examples in this paper are taken from pilot projects currently under development at the U.S. Geological Survey. The deciding factors will be the digitization of the basic data for entry into the data bases

and the establishment of standards for the data, equipment, and software.

The system will require the purchase of terminals, a minicomputer, a plotter, and a GIS software package. The cost of the data will eventually be minimal as vast resource and environmental data bases will undoubtedly be available on optical media.

The biggest problem in establishing a library capability like this may be in just getting the approval to proceed. Electronic cataloging and bibliographic searching are finally progressing, but a whole new mind set will be required to visualize your library as a spatial data information center. But what better place is there for this function? People already come to you for information, you are usually open beyond normal working hours, your staffs are trained information specialists, and much of the raw material and associated reference data are already in your collection.

The information revolution is upon us, and the equipment and software are available to start building a digital spatial data information system. Because the tools are available and the need is there, is it any wonder that I ask, Will your library be the spatial data information center of the future?

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1988

IFLA GENERAL CONFERENCE SYDNEY

Division: SPECIAL LIBRARIES

Section: ADMINISTRATIVE LIBRARIES

72-ADM-1-E

# Research on Development

# The Importance of Publications from Developing Countries and the Implications for Libraries in Industrialized Countries

by

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National Library of Economics in the FRG
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KEYWORD(S):

Researchers' Demand
Statistics
Directories
Buying Trips

For internal use only:

Meeting no.: 111

SI: YES/NO

IR052719

## 0. Introduction

Some people may not regard librarianship and the transfer of information as any help in fighting poverty or for supporting the economic development in the world. But the knowledge of the topical economic situation in the Third World needs informations e.g. in business cycles, capital formation, nutrition, or political institutions. These facts are essential for deciding, where and how to help and for evaluating the development aid.

This paper gives some impressions on the importance of publications from developing countries and their implications for librarianship in industrialized countries. The emphasis is laid on the soft sciences, i.e. the economic and social sciences. The argument for this limitation is the background as a librarian from a research library for economics which is not only the library of a research institute - the Kiel Institute of World Economics - but also since 1966 the National Library of Economics in the Federal Republic of Germany (NLE). Worldwide it has developed into one of the largest and most famous libraries for economic literature. Being a central library, it has the nationwide function to collect, classify, index, and lend economic publications form all countries and in all languages to its national and international users[1]. Especially the close contact to the scientists of the Institute's research departments gives the librarians a good knowledge of the demand for economic literature.

Therefore it seems to be suitable to concentrate on the experiences made in the NLE, although the contributions of the hard sciences (natural and technical sciences) are also important for development. It cannot be decided whether improving the traditional rice processing techniques by

fertilizers and hybrid rice breeding is more important than the growth of the national income induced by a tax reform. Maybe that the effects of hard sciences are more obvious than economic measures.

1. The demand side

Since the 1920's the NLE collects publications concerning states in Africa, Asia, and Latinamerica. At that time this material was mainly produced in the mother-countries for their colonies.

After World War II the development economics have emerged as a new discipline and books from publishers in developing countries have been very much in demand and well-established in academic and administrative circles. There has been a great expansion in output and consumption of research results, but the printing and publication infrastructure in many developing countries has not kept pace with the growing demands for informations and statistics by the researcher who uses special and research libraries for his work.

1.1 Special libraries

A scientist needs the stock of a library specialized in the field of his research. The library may be affiliated with a research institute or an international organization. This means, that the libraries reflect the subject span of the work done in the research departments.

The ILO library for example is interested in such fields as training, employment promotion, social security, and industrial relations or workers' education. Whereas the library of the Commission of the EC collects publications on integration, economic unions and related topics.

Administrative libraries are specialized by the subject of the governmental department they are belonging to. They collect a wide range of

publications from developing countries within their special field. The library of a ministry responsible for development aid will concentrate its collection on literature in development theory and a wide international coverage of publications, reports, and statistics from developing countries. Especially libraries of statistical offices will concentrate their collections on current economic statistics. Libraries of other ministries or agencies like patent offices will specialize in their own field.

1.2 Research libraries

These libraries destinguish themselves from special libraries because of the width and depth of their collections. A research library has to provide a comprehensive and complete collection of publications for its field, that includes e.g. non-conventional literature, working papers from research institutes, internal publications of ministries or statistical offices, and in some libraries like the NLE even the indexing of articles in journals, collected works, and other activities in the field of documentation and information.

Special and even research libraries are not in a position to collect and to buy all the literature being important because of the huge quantity of existing information. Therefore the librarians have to select the publications, of which the acquisition is necessary for their user: They must supply what the researcher is in urgent want of and they must weed out the unnecessary literature.

1.3 Researcher's demand

The demand for economic literature produced in developing countries can be differentiated in

- literature on development theory
- publications on the institutional, political, or social situation in developing countries
- proceedings of conferences discussing regional problems in the Third World
- publications on applied economic research
- annual reports from administrative authorities
- statistics produced by national and international organizations

The greater part of literature on development theory such as handbooks or working papers is mainly published in industrialized countries. Therefore we can leave out the discussion on this topic in the given context.

Much more interesting is the question, which literature published - at least to some extent - in developing countries does the researcher need in the Western World. The acquisition of publications from developing countries is problematic and frequently frustrating: It is a real "problem of bringing books out of Africa and on to the shelves of libraries and booksellers in Europe and North America"[2].

Despite the acquisition problems there is a growing demand for publications produced in developing countries. In respect to publications relevant for research in social sciences and economics the Third World can be devided into three areas of literature production.

Firstly, the least developed countries concentrated in Sub-Saharian Africa are not in a position to publish the required statistics etc. There is a substantial lack of infrastructure for the printing industry because other basic needs have to be realized before.

The second group is mainly formed by Latinamerican states. The production and distribution of literature is rather good, but it depends on the subject the researcher is interested in. For regional and branch studies much material is available, whereas the situation for some countries or for special macroeconomic questions is not sufficient. In Asia, the best supply of regionally produced literature is available. Especially in the newly industrializing countries there is a rather effective publishing branch, although there are some countries in this region with a precarious book production (such as Vietnam or Laos). Besides the political conditions it is evident, that the economic situation in a developing country is an indicator for the book production standard. Analogical to the income differential from country to country, there is a differential concerning the available and marketable literature for economic research produced in the Third World countries.

The research in the Kiel Institute of World Economics is concentrated on international economics. The researcher needs informations on foreign trade, international capital movements, multinational enterprises, foreign investments, raw materials etc. The chief demands are on macroeconomic datas and domestically orientated informations are matters of secondary importance; this includes e.g. political pamphlets, consultancy studies, literature in sociology or publications with only local covering. But in the last years it could be stated that the development economist engages himself more and more in political economy and institutional economics. This change will result in an enlargement of the fields of acquisition.

It is commonly accepted that there is no shortage of theory and

hypotheses. But today some "of the most interesting work done in the development area, in recent years, involves the systematic examination of empirical evidence"[3]. The argument postulates the availability of solid data, of statistics, and facts for development research. This view is supported by others who are convinced, that the progress in international economic research will come in the form of empirical work. They argue, that "the development of increasingly sophisticated econometric tools, the advent of the computer, and the existence and growing availabiblity of large amounts of quantitative information facilitate empirical and econometric work"[4]. The two quotations show the great importance of statistical publications for the researcher in industrialized countries. The more the research is quantitatively orientated, the more the information need will become complex. In case the statistics are official publications, they will be published by the statistical office of the Third World country. But the order has to be made in time, otherwise the few copies being available may be out of stock. It is obvious that acquisitions from statistical offices in developing countries are more difficult for the librarians, because these publications are generally non-conventional literature and thus they often cannot be purchased by book agents.

Another important problem for librarians is the acquisition of publications not officially sold, and not destinated for public dissemination. But datas from internal statistic, from umpublished development plans etc. are cited or mentioned in tables respectively in footnotes and the researcher is just interested in all those publications that are not available in the library - an experience that is made every day.

For some states the researcher is interested in statistics and other publications edited by the central banks in the individual developing

countries. It has emerged that the informations published by the central banks are reliable datas because these banks held a "neutral" position in the economic and political life of a country whereas the ministries have to present a positive balance of their work.
Working on economic problems concerning more than one country, the researcher has to fight with the non-comparability of statistical datas for different states. Sometimes he can use statistical publications of international organizations like the UN and its specialized agencies. But unfortunately the international statistics are often aggregated on such a level that is not suitable for the researcher's projects. So he has to refer to national statistics. The coordination of national statistical systems is not a task for librarians, although they indirectly have to suffer from the lack of comparability.

On the premises that the required statistics are not available neither national nor international, it was suggested to analyse data on the largest corporations including public and banking enterprises in each country[5]. Focusing on the core economic units will give a representative impression of the modern sector of most developing countries. Besides a large number of issues, which could be studied by help of the secondary datas, this alternative neglects some macroeconomic issues, such as labour market, social security, or fertility, as well as all those parts of an economy dominated by small- and medium-sized enterprises or the agricultural sector.
At first sight this seems to be a good solution for some information problems. But the difficulties for the librarians will not only remain, they will even grow: Which are the most important enterprises in a developing country? Will they send their annual reports or any further - probably internal - statistics on demand? For many empirical

investigations the secondary datas will not fulfil the researcher's needs and he is further depending on national and international statistics. The collection of annual reports of important enterprises may only be a help in the sense of publications-of-last-resort.

To conclude, it can be stressed, that the importance of publications from developing countries is significant for the researcher in the industrialized countries, especially when he is doing empirical research. He needs statistics, which can only be obtained from the Third World itself and the librarians have to find ways and means for the acquisition of the required books. Despite the enormous problems, publications of the highest interest and quality continue to come from developing countries.

2. Improving the supply conditions

Librarians should ensure that their work is of mutual benefit to the users of publications from the developing countries. The basis for the improvement of acquisitions should be an effective communication between the producers of e.g. statistics in the Third World and the users of this literature in the industrialized countries. Whereby the user means in the first place the librarians, it must be emphasized that the user in the literal sense of the word - the researcher - requires timely and reliable data that can only be achieved, if data suppliers are prompt, and if the relations between suppliers and librarians are close ones. In the next chapters a possible solution is set forth how to come to closer relations in order to fulfil the needs of a development researcher in industralized countries. It should be mentioned that the proposals have been generated and tested during the work in the NLE. They are not only theoretical ideas but tried means for improving the

literature supply side in the Library and the pitfall of becoming just another well-meaning suggestion is avoided.

As it is obvious from the first part of this paper, the researcher's interest concerning publications from developing countries is mainly concentrated on publications with basic informations, i.e. on statistics. Annual reports of government departments, of trade unions, or other associations are also important because they will give additional informations, and will help to explain the statistics. Non-governmental development aid organizations produce country resp. project orientated studies which are of interest for a researcher, too. In this paper the implications for libraries in industrialized countries will be investigated by the example of statistical publications, but the conclusions drawn from the concentration of one aspect can be generalized for the acquisition of all the (non-) conventional literature published in developing countries.

2.1 Directories

Before librarians can order non-conventional literature, they have to know the name and address of the producers of these publications. A list of the institutions and centers specialized in producing statistics is the most important precondition for the acquisition. This list containing the institutions in developing countries should be enlarged for all those libraries and documentation centers in the world collecting statistics and related publications. These could be libraries of statistical offices or other administrative institutions such as ministries or state agencies. But the focus of the directory project should be the compilation of the appropriate libraries in developing countries.

It is important that the directories will be kept up-to-date and a particular consideration has to be given to the standardization of the datas. All listed institutions should be prepared to sell or to borrow a copy of its organization's publications as fast as possible. Without such a document delivery system the directories will be worth only half its price.

The compilation of the directory should be done from an international professional association of librarians or documentalists. Therefore it can be recommended that the IFLA-members should cooperate with their national organizations for compiling a directory as mentioned above.

Besides the registers of libraries, documentation centers and producers of publications specialized in statistical datas from developing countries there should be directories of the largest companies from these countries. The presented information should make it possible to evaluate e.g. the prospects, markets, strengths and solvency of each company. There should be informations on the financial performance and the company's address to make possible a direct contact to the principal managers, in case it should be necessary to ask for more details. As it was shown above, the secondary informations from the enterprise sector will help to gather the datas, which are not available from official statistics.

For years the NLE has collected annual reports and other periodically produced informations of the most important enterprises in developing countries. The main problem is to identify the important enterprises for each country and to find out the addresses. Much work has to be done to obtain their annual reports on a regular basis.

In this context you have to think of the extremely difficult economic situation in many developing countries, especially in the least

developed ones in Africa. The ability to supply regularly the annual reports respectively any other statistics is substantially influenced by the overall economic situation in each country. But nevertheless the librarians do not have to forget that it is indispensable for respective scientific research to have always a complete set of publications for the empirical studies.

2.2 Business resp. personal relationship

Starting point for a business relation between libraries can be via directories and the resulting correspondence. But this will only be the first step in improving the relations to colleagues in developing countries.

The next move can be done during IFLA conference or each other international meeting. There you will meet librarians from all over the world and you will become acquainted with many colleagues who can arrange the first contact to the producers of the publications the researcher is in great want of.

Examples for the need of communication between the producers and users were presented in a seminar on the provisions and use of economic statistics in Africa. During this meeting the importance of cooperation and personal contacts was emphasized[6].

In many cases it is not enough to have introductory talks at meetings or conferences and even corresponding with the partners in developing countries will not be sufficient for continuous relations. It can be said that business in librarianship is like business anywhere else in the world - the personal contact is essential; and one way to improve the personal contact is to travel into developing countries for making the acquisitions by oneself on the spot. This postulates that the

librarians in the industrialized countries have to make available the financial funds for such travelling.

The buying trips are very expensive and the continuing effect of personal contacts may not be realized. But in the past some members of the NLE made such trips in Europe including the USSR. In most cases the outcome was positive. It depended from three criterias, how successful the expedition was: The librarians' knowledge of the local conditions (including the language), the position of his interlocutors and - last but not least - just plain luck. It must be emphasized that the personal contact to as many as possible collaborators in the visited institution is indispensable for a long-run effect of the trip, because the contact to only one person can stop the interrelationship between the institutions, if this colleague is transferred to a new position without any further responsibility in his old business. To put the relationship on a stable basis, it was proved to be better to have continuous contact to more than one person in the institution.

Sometimes it is a valuable help to make information trips to the IMF or a regional organization such as the Latin American Free Trade Association. These institutions often have a network of agents in developing countries for supplying their libraries with the local book production. Visiting these libraries will give a (probably complete) overview of publications with interest for a development researcher. It may be meaningful to make such visits before going to a Third World Country for a buying trip.

Since - at the moment - there are no financial funds for acquisition trips of NLE-librarians to Third World countries, the members of the Institute's research departments try to arrange contacts between the Library and the producers of literature.

Before going to a developing country for field research, they ask the librarian in charge for any acquisition problem concerning publications from the specific country. In many cases they will get a long list of literature - mainly official publications and significant works published outside the book trade. In some cases the researcher is able to acquire the needed publications and to initiate direct contacts between the Library and the producers of literature. But that is not the rule, because this requires much time the researcher has not available for acquiring literature.

The University Library in Frankfurt has a special responsibility in the FRG for acquisitions from African countries (except economics). In case its librarian will go to Africa for an acquisition trip, he will contact the colleague in charge in the NLE. Evaluating two buying trips, it can be said, that this acquisition method is a necessary and complementary instrument for librarians, and they should organize financial funds for more buying trips than before.

2.3 Institutional interrelationship

In the longrun the unique personal contact will not be sufficient for continuous relations between libraries in developing and industrialized countries. Having done the first step during a buying trip, the next one has to lead from personal contact to institutional connections. The interrelationship is of great importance, because advantages of both sides will secure this form of cooperation. The route is open to all libraries that can offer publications for exchange. The NLE is in the good position to have available the publications of the Institute's research departments for exchange agreements. The publications are of special interest for developing countries, because many of them discuss development problems or selected topics of the world economy.

But - and that may be an obstacle for exchange relations - the NLE is obliged by budgetary law to keep the financial balance of exchange schemes. Sometimes it will be very difficult to fulfil this direction, because books in the Western World are quite expensive and the price of literature from developing countries is reasonable; for the most part official publications are even no-price books. It was necessary to develop criterias for fictitious prices calculated on the basis of comparable publications in the Western World including charges for handling and postage.

An exchange agreement is also a good measure to handle with the shortage of foreign currency in developing countries, i.e. to make available expensive publications from the industrial countries to the Third World.

Apart from the mentioned limitations the majority of the exchange agreements - having already lasted for many years - confirmed that exchange relations work, if both partners can offer or provide publications of interest for the other party and both are willing to keep the agreement alive.

Especially the administrative libraries can make a contribution for improving the situation. As it was shown above, acquiring government publications including statistics is a constant burden for the librarians, because bibliographies are not available and there is seldom an agency or bookseller, from whom to buy an official publication. The only way out seems to order it from the department which issued it. In this situation the close cooperation between administrative libraries, as core units for librarianship in developing countries, and the matching partners in industrialized countries will be of great importance for improving the exchange of literature. The relations between administrative libraries are in a way problem-free, because

there exists a reciprocal confidence for the identical institutional background.

When forwarding the cooperation between the producers of literature, such as statistics, in developing countries and the researchers in the industrialized countries, one should not forget, that the control of information is a key source of the ability of the researcher to exert influence. Maybe that the exchange of information is therefore less a technical problem than a question of politics. The political or economic pressure from international organizations or individual states for economic adjustment programs in developing countries may become more intense according to more exact datas. This conceivable outcome may bring the producers of the information in the developing countries to the conclusion, that the dissemination of datas should not be improved. The solution to such an adverse reaction to more cooperation is - as already mentioned - the need to understand one another in an appropriate atmosphere of confidence.

## 3. Concluding comments

In this paper it was sought to investigate the importance of publications from developing countries. Orientated to the background of economic researcher's demand, the conclusions are more general but on this account no less useful than specific proposals or even numerical certainties. If on occasion it is reverted to specific proposals, it is because of the feeling that statistics from developing countries still do not occupy the central focus they deserve. Nevertheless several features emerge from the analysis.

Firstly, the demand for publications and especially statistics produced

in developing countries is determined by exogenous factors, such as the researcher and his research projects. Special and research libraries only act as intermediaries between producers and users.

Secondly, however complex and difficult the described problem is, special and research libraries can apply a variety of practices to help to resolve them. Of great importance is the structure of personal relations as a basis for continuous relationship between institutions in the Third World and the industrialized countries. One example is the set-up of exchange agreements.

Thirdly, to strengthen good relations, one should support not only the two way flow of books across borders, but there must be ways of helping colleagues in developing countries to find the expert, who can help him with his literature search. Therefore it should be given support to the proposal to compile a "reference book giving the names and addresses of colleagues and libraries in Europe and America, classified according to subject, who may be willing and able to help"[7].

Fourthly, the librarians themselves know best the demand and libraries in the industrialized countries must leave no stone unturned for raising the necessary funds for buying trips into developing countries. Only relations based on personal contacts are made to last.

Fifthly, close relations cannot be built up in a short time. Thus the funding of activities in this sphere must have a long wind. The libraries in industrialized countries have to undertake a long-range planning. Many projects have not yet materialized, largely because of the lack of financial resources.

Sixthly, the active support by IFLA and other organizations in the field of librarianship and documentation will help to realize these plans. The enthusiasm of the individual librarian in an industrialized country as well as in the Third World will be hardly enough. The financiers and the public must become aware of the importance of these activities in librarianship. In the past, sporadic trips have been of striking evidence for supporting this field of action.

Finally, in many instances cooperation on this basis between e.g. European libraries and their partners in the developing world may come close to the context of official development aid. However, it should not be forgotten that personal contact cannot be organized by the state.

This completes the discussion of a small but rather complex aspect of librarianship. It was attempted to integrate some ideas which are not usually simultanously incorporated in the daily business. Each part reflects the importance of publications from the Third World, and a major neglected area: the buying expedition.

Notes

1 A comprehensive analysis may be found in: Seusing, Ekkehart, The Information Activities of the National Library of Economics in the Federal Republic of Germany. "INSPEL", Berlin, Vol.20 (1986), No.3, pp. 148-160

2 Zell, Hans M., The Other Famine. "Libri", Copenhagen, Vol.37 (1987), No.4, pp. 294-306. Here: P. 295

3 Dias-Alejandro, Carlos F., Data Needs in Development Economics. In: The Organization and Retrieval of Economic Knowledge. Proceedings of a Conference held by the International Economic Association at Kiel, West Germany. Edited by Mark Perlman. London 1977. Pp. 353-362. Here: P. 354

4 Tyler, William G., Information Needs and Data Requirements for International Economic Research. In: The Organization and Retrieval of Economic Knowledge, op. cit., pp. 334-349. here: P. 335

5 Dias Alejandro, Carlos F., op. cit., pp. 356 ff.

6 Proceedings of the Seminar on the Provision and Use of Economic Statistics. Gabarone, 6-10 April 1987. Co-organized by: Central Statistical Office, Botswana, UK Overseas Development Administration, Statistical Office of the European Communities. Luxembourg 1987.

7 Kruse, Gerhard, The tasks of libraries in developing countries, as seen from the development policy angle. München 1987. P. 5. (Unpublished)

IFLA GENERAL CONFERENCE SYDNEY

Division: SPECIAL LIBRARIES

Section: ADMINISTRATIVE LIBRARIES

1988

073-ADM-2-E

# SUPPORTING THE UTILITY OF RETRIEVAL RESULTS

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS, ANNUAL CONFERENCE, SYDNEY, 1988. - DR. HARALD MILLONIG, NONBOOK MATERIALS LIBRARIAN, UNIVERSITY LIBRARY MUNICH (FRG)

IR053719

*KEYWORD(S):*

*For internal use only:*

To be brought to meeting no:

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Remarks:

to be presented orally ☐

for distribution only ☐

## 1. Commercial bibliographic databases

Returning from these dark shadows to the bright promises of computerized information retrieval we notice two facts. For more than fifteen years now producers of commercial bibliographical databases and their hosts are waiting for the big boom but instead they are still writing red numbers. Let me refer to some examples: First; in 1986/87 DIMDI, a publicly owned West German host, made about $1.7 million but its services cost the German tax payer about $10 million yearly. Second, according to its president, Mr. Kahn, BRS will continue to need millions of dollars yearly from its mother company TBG. BRS sold about 50.000 passwords, 20,000 of which were bought by end-users. For the second largest host worldwide this is a far cry from opening up mass markets. Marketing strategies of database producers and hosts alike aim at intensifying distribution of information services thereby gradually bypassing traditional information providers like libraries. In the late eighties the database industry considers the leasing of onsite database software and selling CD-ROMs to be instrumental in unlocking market segments. But it remains to be seen whether end-users will accept expensive, ineffective and rather poorly done database products.

## 2. Information retrieval research

The data organisation of commercial bibliographical databases consists of a document or source file with derived inverted files making up a relational database the pattern matching algorithms of which being pepped up with Boolean logic. This type of spreadsheet database clearly originated from bookkeeping and other economic transactions. That is why it does not really fit the manipulation of character strings. The fact that this dinosaur of a database model not only survived by inspite of more than twenty years of IR research still dominates the commercial scene of bibliographical databases can only be explained historically. When after the Sputnik shock in all Western industrialized countries millions of dollars poured down onto the fields of education and information it was huge bibliography plants like Chemical Abstracts or the Library of Congress which soon felt obliged to offer publicly machine readable data files, the raw material of their print products, that is. Since then some technical recommendations like truncation, word position indexes, simplified ranking procedures etc have been introduced into commercial databases. The lack of fundamental change makes such a database look like an electrified library catalogue of items with abstracts and Boolean search algorithms. In contrast to this rather old-fashioned outfit of existing databases information retrieval research brought many insights into what a bibliographical database could and should be achieving. Giants like K. Sparck Jones, W. Lancster, C. Van Rijsbergen and G. Salton, just to

mention a few, deepened our understanding of the retrieval process. Without going into detail I shall point to some topics of IR research:

- Computer linguistics for automatic indexing
- Cluster analysis for automatic classification
- Real-life generalization of set theory beyond binary Boolean algebra to multi-valued 'fuzzy set theory'
- Powerful ranking algorithms founded on probabilistic theory.

Although IR research will still have a long way to go I shall anticipate here an ideal IR system just for arguments sake. - The database system is fed from two types of sources; a letter recognizing scanner reads in automatically the text of huge masses of documents, another huge amount of text is directly input from the computer storage of publishing houses or by electronic publishing. The system automatically analyzes all sorts of texts, indexes them and thereby reconstructs steadily the thesaurus. Then the system does cluster discrimination analysis using vector algebra to update the classification. In case a search question is put the system finally does very subtle comparisons of the degree a given search term or string of search terms match thesaurus terms or well defined clusters of terms. The output then consists in a list of hits ranked according to their relative correspondence with the search input. - That sounds good, doesn't it. But it will work that way only in an ideal world. In reality all technical niceties and subtle mechanisms will not prevent such a system from leaving the user dissatisfied. There may be different reasons for this to happen:

- the user does not understand the language, the content, or the intention of the documents
- the user does not like the authors of the documents
- the user knows already all those documents
- the user considers those documents all rubbish
- the user wants just the three best articles on the subject published within the last two years and not an undiscriminative junk of aboutness
- etc.

## 3 Networks of communication

Why is it that all the information retrieval systems fail to really satisfy more than modest needs? - The most comprehensive study of information retrieval done so far is documented in the May '88 issue of the JASIS. This long-term and still going-on research by T. Saracevic and others yields some results as to answer the above question:

- "Overall recall cannot be calculated" ((210)), "the whole notion of recall,.. should be seriously questioned." ((213)) - Commentary: Recall is defined by the number of retrieved relevant items (a) divided by the sum of the retrieved relevant items (a) plus the not-retrieved relevant items (c), a/a+c. He who knows the number of not-retrieved relevant items knows already the whole database thoroughly enough and need not do this search. Anybody else can simply not infer the recall figure.
- "When precision and recall were plotted against each other, the

two were not inversely related." ((212)) -
Commentary: Precision is defined by the number of retrieved relevant items (a) divided by the sum of retrieved relevant items (a) plus the retrieved irrelevant items (b), a/a+b. As to the decision on item relevance I mentionned reasons of users' dissatisfaction above. But basically this quotation suggests that there is no correlation of the kind that a more refined search will produce a more precise result; it will simply produce a smaller output.

- "Different searchers for the same question chose a substantially different set of search terms and retrieved a substantially different set of items." ((214)) -
Commentary: To librarians it is common place to state the interpretative and associative subjectivity of anyone's subject analysis. But apart from this does it seem rather daring to remedy this approach by automatic analysis of search questions: how could algorithms be designed to interprete human language for machines which do not possess real life knowledge? Since, as T. Saracevic writes, the "use of the computer and/or computer logic as a model ... for such <human information behavior> theory building is simply inadequate." ((213))

Scientific communication is complex. So let's step back and have a look at the societal environment of databases. - Just for analysis sake we may discern different dimensions and properties of scientific communication although in reality these dimensions intermingle and influence each other.

## 3.1 Subject fields

Disciplines differ, among other things, in the degree of internationality. Natural sciences, e.g., have a high degree of internationality. This makes up for properties like a huge and still precise vocabulary, a low level of ideology and a reliable system of peers' judgement. For tests of information retrieval systems databases in natural sciences have been used more often than any other database type. Social sciences are surely less international in approach and application. Take for example a special economic theory. Whereas the governments of the USA, the UK and the FRG still do believe in the monetary school of thought, a counterbalance seems to be in sway. But the vocabulary of all economic schools is rather vague and full of ideologies. Peers' judgement, therefore, corresponds to words uttered ex cathedra by the pope of a given school. That's why progress in economic theory is so hard to detect - to say nothing of progress in economic practice. Communication patterns of students of economics make them prefer factual databases to bibliographical ones.

## 3.2 Geographical levels

Many disciplines differ also in the degree of regionality or geographical dependence. There will be no doubt that in Australia live more specialists for the languages of the Australian aborigines than in any other part of the world. On the other hand

in Bavaria you will find more art historians studying the Barock style of Bavarian churches than in Australia. Let's assume that an Australian linguist who did field research before now does a database search on a nearly gone native language. Browsing through the retrieval output he suddenly hits upon an unknown author's Bavarian name 'Zwergenmoser'; besides being amused and a bit curious about the motives of a Bavarian scholar to study Australian native tongues he will surely not consider him of topmost importance in the field, simply because of regional considerations. The same story, of course, could be told vice versa regarding a Bavarian art historian who comes across a Dutch name in a database on Barock style.

### 3.3 Horizontal and vertical communication

Whoever served some time as information officer knows that items get often recommended to students by their fellow students. This is quite natural and would deserve no commentary were it not for the following reason: a student searching for such an item in a database is keen to identify exactly this title. If he cannot find it he may lose confidence in all other retrieval results.

Even more serious will be the case if the student does not hit the item that a teacher recommended. The most dangerous situation arises when a student is looking up an item in the database he urgently needs for examination. If he cannot retrieve the title or gets informed of the titel being on loan in another library several hundred miles away, well, then the librarian will get into trouble - and the database will lose image. And what will the librarian answer if this user is asking: "Is there an equivalent title among the retrieved ones?" - Literally 'equi-valent', he means.

But even less critical situations can put end-users and librarians under stress. The well-known subject headings catalogue stands for the non-specialist's entry to a subject field. This type of catalogue is going to be substituted by Boolean keyword searches. Users are different: students, journalists, genealogists, teachers, project researchers, they all use different languages. They communicate differently.

It is necessary to develop interfaces corresponding to all sorts of informatio. behaviour like
- different types of languages to communicate a discipline's information
- different types and levels of communication networks.

One of the most powerful approaches to this end has been ISI's citation analysis. This method, because of marketing reasons being centred on the most international level of communication, is unsurpassed in results by any of the IR strategies.

### 3.4 Projection centred approach

From a theoretical point of view any given bibliographical database is a node in a lively network of scientific communication. There are different types of channels the messages use to be sent internationally, nationally and regionally/locally:

- written ones: the reports of applied natural sciences, the long articles of historians, the precise and fully referenced science articles etc.
- events: associations, conferences, meetings, unpublished papers etc.
- personal relations: researcher-teacher-relationship, teacher-student-relationship, student-student-relationship, recommendations, interdependencies, examination rules etc.

The failure of the system centred approach in database design is due to confining itself to a small part only of the communicative activities, namely the automation of formal linguistic analysis of both the search request and the document abstract. - The integration of different facets of the scientific communication network into the design of databases will help to solve two basic problems:

- the end-user encounters a database interface representing his own intellectual environment so that he cannot but identify with it
- the evaluation of information is not only possible but necessary by way of adding communicative symbols to retrieved items.

## 4 Where do libraries fit in?

Any such database being used in a library environment is a mirror and a projection of the different levels and variables of local communication. - An item retrieved will show up with the statistical analysis of its usage over time; window techniques may be used to represent rough or deep analysis. Statistical figures for the usage of a series of retrieved hits may be transformed into graphics. These graphics in turn can be compared to similar searches done before whereby 'similar' will be defined in terms of descriptor matching as well as local evaluative behaviour. - 'Local evaluative behaviour' comprises oral recommendations by peers, lists of prescribed examination literature, citation analysis of local authors, reviews by local authors etc. Again, these formalized properties of items will show up with any item retrieved. - What may be small information in regard to one item can be summarized and transformed into graphics on subject fields, age groups, projects etc. - Finally, each end-user gets his personal search history file, may be off line. This will enable him to measure his own progress in searching and to compare the gradual growth of subject competence.

In this way fostering and furthering the end-user's computer literacy within the scientific communication network the library may be of help to change a situation which T. Saracevic deplores in the following words:

"Searching for information is far from being a science, and as yet the present heuristic rules or principles of searching as stated do not take into account some important aspects of what

seems to be really going on. As yet, a plausible algorithm or even a reasonably comprehensive and consistent set of heuristic rules reflecting human information searching does not exist. Searching is still an art and a very imprecise art at that." ((215))

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1988

74 - ADM-S-E

# Standards in Patent Office Publications

## an example for the easier acquiring of technical-scientific information

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IR053719

KEYWORD(S):

For internal use only: SI
To be brought to meeting no:
111
Remarks:
to be presented orally ☒
for distribution only ☐

# Standards in Patent Office Publications

an example for the easier acquiring of technical-scientific information

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Summary

It is well known that information and especially technical information becomes for many countries more and more a kind of raw material. Due to the existing wealth of information it is often extremely difficult to obtain the correct information at the right time.

This papier wants to demonstrate that in the field of patent information the use of standards for information editing and for offering have diminished the above mentioned problem. For this purpose some international standards, elaborated by the World Intellectual Property Organization (WIPO) are given as examples.

In dealing with questions of the economy's competitiveness, one recognizes, that it is precisely in the industrial states, where the significance of technical-scientific information is increasingly the emphasis for reflections. The extent to which the already frequently discussed change from the industrial society to the information society is paying off, shall not be closely examined here. For the Federal Republic of Germany, for example, the technical-scientific information for the economic sphere has always played a very decisive role. As a country with a high wage level, short of raw materials, its international competitiveness to a large degree depends upon the export of high quality products. But these can be produced only, if the ne-

cessary information becomes available. With this in mind, technical information above all for many countries can already today be considered as a kind of raw material whose vital importance is not always sufficiently recognized. Taking, for example, the Federal Republic of Germany, this is why annually up to 30 % of the research and development expenditures are spent for nothing due to insufficient information. This is roughly 18 billion DM for 1987.

This general finding on the importance of technical information, on the other hand, is confronted with the experience that, because of the existing wealth of information, it is frequently extremely difficult to obtain the correct information at the right time. Who of us was not already faced with information having the following characteristics:

- the indicated source could not be clearly defined;

- abbreviations could not be solved;

- the non-structuring, e.g. of a subject matter contribution required his entire reading for verifying a definite partial information;

- the unambiguousness of an information could not be determined (e.g. authorship, publication-related data);

- the different technical features of information carriers rendered their use impossible.

Exactly the natural science and technology sector with its annual nearly four million publications of techni-

cal or natural scientific contents in about 65 languages shows that it is becoming more and more difficult to make the necessary information available in time. The traditional precesses - e.g. paper-supported files - can no longer accomplish this. The information requirement and the flood of information, however, will continue to increase. Already in 1990 almost every third person of an age category (approx. 1,5 million human begins) in the Federal Republic of Germany will study. As in other sectors, one is already aware that the most sophisticated information technology is more suitable for the necessary information retrieval.

Traditional and EDP-supported processes of the information handling could be much more effective, if the technical information would, to a far greater extent, be subjected to certain, preferable internationally agreed standards for their making, to be used for the information editing and for offering them in conventional as well als electronic systems. Therefore, the following are attempts to demonstrate by means of some typical examples from the field of patent office publications, in which way internationally elaborated standards in this area were realized and which information-relevant results they involved. It is entirely clear that the examples and their contents cannot easily be transferred to other technical-scientific kinds of literature. Taking this into account, by giving examples, this statement will arouse one to the set of problems when using standards for establishing literature.

Internationally, for the elaboration of standards in respect of patent office publications the World Intellectual Property Organization (WIPO) with head-

quarters in Geneva, is highly active, indeed. This organization, an affiliate of the United Nations, the origins of which go back to 1883, was established by a Convention signed in Stockholm in 1967, which entered into force in 1970. One of its main objectives is the world-wide promotion of the protection of intellectual property through international cooperation. In the sphere of patent documentation it endeavours to coordinate respective national activities through international cooperation. As a result of these efforts recommendations (= standards) are drawn up which break down as follows

- general and specific standards relating to patent documents;

- standards relating to other patent office publications;

- standards related to microforms with patent documents;

- standards in respect of machine-readable carriers of patent information.

The following examples are taken from the fields of general standards relating to patent documents and those to microforms and shall illustrate, how in the event of patent office publications the reproduction of important information as well as their possible data carriers were standardized for the purpose of an improved use.

In the following, patent office publications are understood to be above all patent-relevant documents (e.g.

patents, utility models) and further patent office publications (e.g. patent gazettes). An example of a patent document is shown in Annex 8 and within such a document technical, legal and economic information ist given at the same time and can be identified in particular by the following important characteristics:

- indication of a classification designating the technical field; almost always the International Patent Classification (IPC);

- communication of technical information by detailed description of the invention as well as comprehensive indications concerning the industrial exploitation;

- communication of the technical information usually takes place earlier than in other technical publications. An impressive example is a WIPO-study of 1982:

| | Date of Published Patent | Date the information published in other literature |
|---|---|---|
| Hollerith (punch card) | 1889 | 1914 |
| Baird (television) | 1923 | 1928 |
| Whittle (jet engine) | 1936 | 1946 |
| Morrogn (ductile cast iron) | 1939 | 1947 |
| Ziegler, Natta (polymerization catalyst) | 1953 | 1960 |

- a frequently existing abstract which permits an immediate information on the technical content of an application.

Patent Gazettes, on the other hand, contain primarily bibliographic and legal information on patent-relevant documents.

WIPO-Standard ST.3 (Two-Letter Country-Code[1])

This Standard enclosed by excerpts in Annex 1 which corresponds to ISO-Standard 3166 is applicable to countries, international organizations or other institutions issuing or registering industrial property titles. Its most important field of use is obvious as regards patent office publications where it is used for the indication of origin of the same documents or those cited in them; look for the example "DE" given in Annex 8, front page.

Its wide use is based in particular

- on its unambiguousness;
- on the association with the spelling in full provided in most cases;
- on the easily noticeable combination of two letters;
- on the brevity of the designation

1 The WIPO-Standards are printed in the "Patent Information and Documentation Handbook", World Intellectual Property Organization (WIPO), Geneva

Its use saves in particular

- faulty application of the written out indication of origin;
- time-consuming preparation of quotations of literature.

WIPO-Standard ST.7/E (Microfiche)

This Standard enclosed by excerpts in Annex 2 provides - starting from the 150 Standards 5126 and 2707 - recommendations for the use of microfiches as information carrier of individual patent documents. The recommendations in particular refer to

- physical properties of microfiches;
- their dimensions;
- quality requirements;
- information contents for the heading area.

By these stipulations, mainly as regards format and quality characteristics, criteria have been established, which facilitate substantially the elaboration of information and information retrieval. The use by the Patent Offices of this Standard in the publication of patent documents increases the users acceptance for this medium as information carrier since uniform data carriers are basically generated.

As publications on microfiches increase in other technical-scientific areas, too (e.g. dissertations), a certain uniformity would be desirable also for the use of information.

WIPO-Standarfd ST.9 (INID[1]-Code)

This Standard enclosed by excerpts in Annex 3 serves to allocate the most different bibliographic data (e.g. name of the inventor, filing date, day of publication, title of the invention) in patent office publications to a two-digit number. Nearly every important industrial country has these numbers printed in small brackets or circles before the respective bibliographic data on the patent documents, with numbers also cumulatively placed side by side. An example is given in Annex 8; front page of the document.

The major importance of this Standard in the search for bibliographic information in particular involves the following:

- the language of the document out of which the information is required, need not be mastered;

- the legal basis underlying the document from which the information is required, need to be known.

The linguistic bridging function of this Standard in particular provides for the following benefits in information retrieval:

- access in its contents to patent office publications in the foreign language is possible;

- the employment of highly qualified manpower for the search of bibliographic data is reduced;

1 INID = Internationally agreed Numbers for the Identification of Data

- the bibliographic content assigned to the numbers is always the same;

- the coordination is explicit;

- need information can be found ad hoc.

It is precisely this Standard which shows the great benefits that can be derived in establishing information.

WIPO-Standard ST.10B (Layout of bibliographic data components)

This Standard enclosed by excerpts in Annex 4 controls the layout of bibliographic data in patent documents. This provides for patent documents having a more or less uniform outer appearance. The layout of a patent document can be seen in the example given in Annex 8. For the information retrieval it has above all the following advantages:

- clear arrangement of the pieces of information;
- coordination of coherent pieces of information;
- familiarzing oneself again and again with the structure of a document ceases to exist.

This Standard markes it rather clear how information retrieval is substantially facilitated already by the standardization of the optical Layout. It makes it possible that working with a great number of documents is becoming less tiresome.

WIPO-Standard ST.10C (Presentation of Bibliographic Data Components)

This Standard enclosed by excerpts in Annex 5 recommends how individual bibliographic information (e.g. date, classification, filing number) is to be presented in patent office publications. Such information is already governed in substance by their own Standards.

This Standard gives recommendations for the presentation of bibliographic data components with the following particular advantages:

- standardization of the interpretation of information to be presented;
- clarification of possible collisions through parallel use of analogous information;
- citing of practical examples.

This Standard makes it plain how useful it is, to prived in addition to recommendations on the content of the information to be adopted also those about their presentation.

WIPO-Standard ST.14 (Recommendation for the Inclusion of References Cited in Patent Documents)

This Standard enclosed by excerpts in Annex 6 provides recommendations for citing bibliographies which are used in patent proceedings for the examination of patent applications. In which way the standard is used is shown in Annex 8; front page; INID-Code Nr. 56. It deals with - just like ISO 3388 and DIN 1505, part 2 - a problem not yet sufficiently solved in the remaining technical-scientific field.

By virtue of the importance of this subject for the establishing and retrieval of information the recommendation concern

- the order, in which different classes of literature are to be cited;

- the information parts to be indicated from a class of literature;

- the order of the information to be presented within a class of literature.

The recommendations indicated in the Standard refer to

- domestic and foreign patent documents;

- books or other independent publications;

- articles from journals or other journals issued periodically;

- abstracts

The recommendations show that they are mostly directed to the presentation of minimum indications which are indispensable for the unequivocal definition of an extracted source of literature.

The correct use of this Standard is increased that concrete examples are given for each of the classes of literature cited.

This Standard shows the usefulness and necessity to provide directives for citing sources of literature to improve decisively information retrieval.

WIPO-Standard ST.16 (Standard Code for Identification of Different Kinds of Patent Documents)

This Standard enclosed by excerpts in Annex 7 provides for recommendations to identify in particular patent documents by adding a capital letter and a further optional addition of a number 1-9. See Annex 8, front page; "A1".

The identification concerns in case of patent documents

- one and the same patent document in its various stages in which it is published;

- various kinds of patent documents possible on the basis of national legislation (e.g. patents, utility models).

The importance of this Standard for patent documents is the following:

- the status of a patent application in view of publications to be realized in a legal sense can be clearly determined. This is particularly important, where for all types of publications of a patent application one and the same document number is used;

- the various kinds of patent documents can be clearly determined;

- the possibility to add a figure to the capital letters permits further information on the document, for instance, the count of corrected editions.

This Standard together with WIPO-Standard ST.3 (two-letter code) and the document number form the minimum

indication necessary for the unambiguous identification of a patent document.

The Standards reflected here like those in the field of patent documentation and patent information have without doubt contributed worldwide to an increased use of patent information. Nevertheless, patent information for acquirinig technical information is currently not used to the extent necessary, strictly speaking.

12. If the intended use of the microfiche is the international exchange of (complete) patent documents, no more than one document shall be filmed on one single microfiche. If, in exceptional cases, the number of pages of the patent document exceeds the number of image areas available, trailer fiches shall be produced.

Microimage Placement and Orientation

13. Format and image arrangement shall be that of ISO 2707, No. 1 and No. 2. Microimages shall be positioned according to the grid pattern shown in Figures 1 and 2 in such a manner that, when the fiche is held so that the heading is right-reading and upright, microimages shall always be right-reading and, whenever possible, upright.

14. Drawings or tables, which cannot be filmed upright on the microfiche, shall appear on the fiche rotated 90° counter clockwise from the upright position.

15. Drawings or the like which can be accommodated in a double, but not in a single, frame may be placed in a double frame according to ISO 2707, No. 1 and No. 2.

Reduction

16. In order to provide a close compatibility with ST.7/A, the reduction of A4 size documents shall be so that there is a margin of at least 0.125 mm between the information area and the adjacent microfiche frame boundary. Smaller size documents shall reasonably fill the frame area.

Heading Area

17. The heading area above the image area of each microfiche shall be reserved for identification references. All characters in the heading area shall be upright and right-reading. All entries shall be readable without magnification.

18. The minimum areas reserved for the heading are indicated in Figures 1 and 2. If additional heading space is required, the area allocated to the next entire row or rows of images shall be used. When more than one row is used for the heading, the frame identification, as specified in paragraphs 21 and 22 below, shall remain unchanged. The heading area constitutes the top of the microfiche. The minimum area reserved for the heading shall be used only for heading and identification purposes on all microfiche, and not for microimages.

19. For microfiches used as unit record document carrier for exchange of patent documents -

(a) the main portion of the heading area shall be utilized for the identification of the document which shall comprise at least:

- the indication of the issuing Office or the country of origin; if abbreviated the two letter WIPO Country Code shall be used
- the kind of document identified by the WIPO Kind-of-Document Code ST.16 (former ICIREPAT Code SI.8)
- the document number, to be placed in the top right portion;

(b) the main portion of the heading area should further preferably also be used for indicating at least the first IPC Symbol allotted to the document;

(c) the extreme right hand portion of the heading area shall be utilized for indicating how many microfiches have been used to record the document and the current number of the fiche within this series. If no trailer microfiche is required, this space may be left blank.

ANNEX A, SECTION 1

List of Countries, and of Other Entities
Issuing or Registering Industrial Property Titles
(in the order corresponding to the current UN and WIPO practice)

Afghanistan .....AF
Albania .....AL
Algeria .....DZ
Angola .....AO
Anguilla .....AI
Antigua and Barbuda ...AG
Argentina .....AR
Australia .....AU
Austria .....AT

Bahamas .....BS
Bahrain .....BH
Bangladesh .....BD
Barbados .....BB
Belgium .....BE
Belize .....BZ
Benin .....BJ
Bermuda .....BM
Bhutan .....BT
Bolivia .....BO
Botswana .....BW
Brazil .....BR
British Virgin Islands .....VG
Brunei Darussalam .....BN
Bulgaria .....BG
Burkina Faso .....BF
Burma .....BU
Burundi .....BI

Cameroon .....CM
Canada .....CA
Cape Verde .....CV
Cayman Islands .....KY
Central African Republic .....CF
Chad .....TD
Chile .....CL
China .....CN
Colombia .....CO
Comoros .....KM
Congo .....CG
Costa Rica .....CR
Côte d'Ivoire .....CI
Cuba .....CU
Cyprus .....CY
Czechoslovakia .....CS

Democratic Kampuchea ..KH
Democratic People's Republic of Korea ...KP
Democratic Yemen .....YD
Denmark .....DK
Djibouti .....DJ
Dominica .....DM
Dominican Republic ....DO

Ecuador .....EC
Egypt .....EG
El Salvador .....SV
Equatorial Guinea .....GQ
Ethiopia .....ET

Falkland Islands (Malvinas) .....FK
Fiji .....FJ
Finland .....FI
France .....FR

Gabon .....GA
Gambia .....GM
German Democratic Republic .....DD
Germany, Federal Republic of .....DE
Ghana .....GH
Gibraltar .....GI
Greece .....GR
Grenada .....GD
Guatemala .....GT
Guinea .....GN
Guinea-Bissau .....GW
Guyana .....GY

Haiti .....HT
Holy See .....VA
Honduras .....HN
Hong Kong .....HK
Hungary .....HU

Iceland .....IS
India .....IN
Indonesia .....ID
Iran (Islamic Republic of) .....IR
Iraq .....IQ
Ireland .....IE
Israel .....IL
Italy .....IT

Jamaica .....JM
Japan .....JP
Jordan .....JO

Kenya .....KE
Kiribati .....KI
Kuwait .....KW

Laos .....LA
Lebanon .....LB
Lesotho .....LS
Liberia .....LR
Libya .....LY
Liechtenstein .....LI
Luxembourg .....LU

Madagascar .....MG
Malawi .....MW
Malaysia .....MY
Maldives .....MV
Mali .....ML
Malta .....MT
Mauritania .....MR
Mauritius .....MU
Mexico .....MX
Monaco .....MC
Mongolia .....MN
Montserrat .....MS
Morocco .....MA
Mozambique .....MZ

Nauru .....NR
Nepal .....NP
Netherlands .....NL
Netherlands Antilles ..AN
New Zealand .....NZ
Nicaragua .....NI
Niger .....NE
Nigeria .....NG
Norway .....NO

Oman .....OM

Pakistan .....PK
Panama .....PA
Papua New Guinea .....PG
Paraguay .....PY
Peru .....PE
Philippines .....PH
Poland .....PL
Portugal .....PT

Qatar .....QA

Republic of Korea .....KR
Romania .....RO
Rwanda .....RW

Saint Christopher and Nevis .....KN
Saint Helena .....SH
Saint Lucia .....LC
Saint Vincent and the Grenadines .....VC
Samoa .....WS
San Marino .....SM
Sao Tome and Principe .ST
Saudi Arabia .....SA
Senegal .....SN
Seychelles .....SC
Sierra Leone .....SL
Singapore .....SG
Solomon Islands .....SB
Somalia .....SO
South Africa .....ZA
Soviet Union .....SU
Spain .....ES
Sri Lanka .....LK
Sudan .....SD
Suriname .....SR
Swaziland .....SZ
Sweden .....SE
Switzerland .....CH
Syria .....SY

Taiwan, Province of China .....TW
Thailand .....TH
Togo .....TG
Tonga .....TO
Trinidad and Tobago ...TT
Tunisia .....TN
Turkey .....TR
Tuvalu .....TV

Uganda .....UG
United Arab Emirates ..AE
United Kingdom .....GB
United Republic of Tanzania .....TZ
United States of America .....US
Uruguay.....UY

Vanuatu .....VU
Venezuela .....VE
Viet Nam .....VN

Yemen .....YE
Yugoslavia .....YU

Zaire .....ZR
Zambia .....ZM
Zimbabwe .....ZW

Identification of Sensitized Size

7. To facilitate microfiche-to-microfiche copying, a notch or a corner cut may be used to identify the sensitized layer of the microfiche. When a notch is used, it shall be made in the shorter side of the sheet, near the appropriate corner. The notch may be of any shape, but it shall not penetrate more than 1.6 mm inward from the edge of the microfiche. When a corner cut is used, it shall be made in the appropriate corner of the heading area only. The cut shall extend a nominal 6 mm along the longer side of the microfiche and a nominal 9 mm along the shorter side of the microfiche.

8. The sensitized side shall be identified by one of the following methods:

Method A -- When a sheet of raw film or a microfiche is held with the long sides in a horizontal position and the notch in the lower right-hand corner, or the corner cut is in the upper left-hand corner, the sensitized side will be towards the observer.

Method B-- When a sheet of raw film or a microfiche is held with the long sides in a vertical position and the notch or corner cut is in the upper right-hand corner, the sensitized side will be towards the observer.

Corner Rounding and Measurements Involving Cut-Off Corners

9. The corners of the microfiche may be rounded, with the exception of the corner which has been subjected to a corner cut (see 7 above). When corners are rounded, the process shall not remove more than 3 mm of either of the two edges forming the corner. Where segments of an edge have been removed by corner rounding or corner cuts, a straight line extending the remainder of the edge in the relevant direction shall constitute the basis for measuring dimensions and spacing.

10. All measurements will be made from the bottom edge and the left-hand corner of the microfiche as reference.

FRAME SIZE AND FORMAT

General Layout

11. The following table specifies the arrangements that shall be used for photo-optically generated microfiches:

| Arrangement | Image Area | Single Frame | | | Double Frame | | | See Figure |
|---|---|---|---|---|---|---|---|---|
| | | Columns | Rows | Number of Frames | Columns | Rows | Number of Frames | |
| No. 1 | 82.5mm X 141mm | 12 | 5 | 60 | 6 | 5 | 30 | 1 |
| No. 2 | 87.5mm X 140mm | 14 | 7 | 98 | 7 | 7 | 49 | 2 and 3 |

The reduction shall be of 1 : 12 to 1 : 25.5 depending on the size of the document.

## INID CODES AND MINIMUM REQUIRED FOR THE IDENTIFICATION OF BIBLIOGRAPHIC DATA

(10) Document identification

*(11) Number of the document

*(12) Plain language designation of the kind of document

*(13) Kind of document code according to WIPO Standard ST.16

**(19) WIPO Standard ST.3 code, or other identification, of the office publishing the document

Notes: (i) ** Minimum data element for patent documents only.

(ii) with the proviso that when data coded (11) and (13), or (19), (11) and (13), are used together and on a single line, category (10) can be used, if so desired.

(20) Domestic filing data

*(21) Number(s) assigned to the application(s), e.g. "Numéro d'enregistrement national", "Aktenzeichen"

*(22) Date(s) of filing application(s)

*(23) Other date(s), including date of filing complete specification following provisional specification and date of exhibition

(24) Date from which industrial property rights may have effect

(25) Language in which the published application was originally filed

(26) Language in which the application is published

(30) Priority Data

*(31) Number(s) assigned to priority application(s)

*(32) Date(s) of filing of priority application(s)

*(33) WIPO Standard ST.3 Code identifying the national patent office allotting the priority application number or the organization allotting the regional priority application number; for international applications filed under the PCT, the Code "WO" is to be used

(34) For priority filings under regional or international arrangements, the WIPO Standard ST.3 Code identifying at least one country party to the Paris Union for which the regional or international application was made

Notes: (i) With the proviso that when data coded (31), (32) and (33) are used together and on a single line, category (30) can be used, if so desired. If an ST.3 Code identifying a country for which a regional or international application was made is published, it should be identified as such using INID Code (34) and should be on a line separate from that of elements coded (31), (32) and (33) or (30).

(ii) The presentation of priority application numbers should be as recommended in WIPO Standards ST.10/C and in ST.34.

(40) Date(s) of making available to the public

**(41) Date of making available to the public by viewing, or copying on request, an unexamined document, on which no grant has taken place on or before the said date

**(42) Date of making available to the public by viewing, or copying on request, an examined document, on which no grant has taken place on or before the said date

*For the meaning of this asterisk, see paragraph 6 of this Standard.

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9. The attention of any Office which wishes to improve the quality of its patent documents by repeating the document number in the margin is drawn to the practice of several Offices which repeat the document number on their patent documents as follows:

Margin, bottom left, turned 270° clockwise: Austria, Germany (Federal Republic of)

Margin, bottom left: Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Romania

Margin, top right, turned 270° clockwise: Germany (Federal Republic of)

Margin, top left, turned 270° clockwise: Ireland, Switzerland, United Kingdom

Margin, top left: Yugoslavia.

Margin, top center: United States of America.

10. It is recommended that the patent document number printed in the margin of the first page of the patent document be closely associated with the two-letter code of the issuing country and the respective Kind-of-Document Code (WIPO Standard ST.16) of the patent document, e.g.

AT 317609 B
DE 2450490 B1
DE 2126452 C3
FR 2235104 A2
FR 2236538 A5
NL 7412658 A
NL 145804 B
NL 144413 C

11. When an office republishes the whole or part of the text of a patent document already published by another office or organization, the identification of the republished document should be given as normal on the front page of the republished document, viz. the two-letter code identifying the republishing office or organization, the document number, and the kind of document code appropriate to the republished document. These three elements of identification should be printed together at the top of the page and preferably in a large type face. The corresponding three elements identifying the originally published document should be given, together with the appropriate INID Code, immediately below the elements identifying the republished document but in a smaller type face. Examples are as follows:

(10) DE 31 44 423 T1
(87) WO 81/03046 A1

(10) DE 0 084 550 T1
(87) EP 0 084 550 A1

12. In the case where the office republishing the document uses the same publication number as the originally published document, the data elements, for purposes of efficient use of space on the front page of the republished document, may be presented together with the two letter code identifying the office republishing the document given first, followed by a slash, followed by the two letter code identifying the office or organization originally publishing the document, followed by the document publication number, followed by the kind of document code appropriate to the republished document. An example of the display of the data elements is:

(10) DE/EP 0 084 550 T1

13. In any computer record corresponding to the republished document, a record of the normal three data elements identifying the republished document only should be made in the part of the computer record dealing with document identification data, viz. the two letter code identifying the office republishing the document, the document number and the kind of document code appropriate to the republished document, i.e. DE 0 084 550 T1.

PRESENTATION OF BIBLIOGRAPHIC DATA COMPONENTS

PRESENTATION OF DATES

1. Dates expressed using the Gregorian Calendar can cause misunderstandings particularly in connection with the order in which numerals representing the day, month and year are given.

2. To avoid misunderstandings, it is recommended that:

(i) the only numerals to be used are Arabic numerals;

(ii) if the month is designated by a number in Arabic numerals, then:

(a) Arabic numerals are to be used also to designate the day of the month and the number of the year;

(b) the order is to be day, month, year; and

(c) between the designation of the day and that of the month, and between that of the month and that of the year, there should be a full-stop, a slash or a space.

PRESENTATION OF CLASSIFICATION UNITS

3. Classification units should be presented with all elements of a given unit contained in the same line, preferably in such a manner as to facilitate machine transcription.

4. In the case of the International Patent Classification, the relevant edition should be indicated as a superscript, e.g. Int.Cl.$^{3}$ in the case of the third edition.

PRESENTATION OF APPLICATION NUMBERS

5. Experience has shown the need for application numbers to be presented in a clear, unambiguous manner, particularly since application numbers as presented on patent documents are frequently the sole method of identifying all members of a patent family. The considerations given below apply equally to all presentations of application numbers of patent documents whether to the application number accorded to the application filed in the issuing office or that filed in the priority country.

6. The presentation of the application number should preferably be:

(i) exactly in the manner used by the country concerned in full, or

(ii) abbreviated to the minimum significant part, enabling the application to be uniquely identified.

7. When the application number is abbreviated to the minimum significant part (deletion of letters and numerals given by the country concerned for internal or special purposes such as check digits, classification marks, etc.), a need exists for a more uniform presentation thereof, in particular when information presented on the first page of patent documents is composed for printing (e.g. typeset, photocomposed, retyped, etc.). An application number, as represented by the country concerned, may therefore be represented in a more uniform manner using the following rules:

11. Identification of any document cited shall be made by indicating the following elements in the order in which they are listed:

(a) In the case of a document set forth in Category (i) to (iii) of paragraph 10 above:

(i) the Office that issued the document, by the two-letter code (of WIPO Standard ST.3);

(ii) the kind of document, by the appropriate symbols (of Standard ST.16), as indicated on the original document;

(iii) the number of the document as given to it by the Office that issued it (for Japanese patent documents the indication of the year of the reign of the Emperor must precede the serial number of the patent document);

(iv)* the date of publication of the cited patent document as indicated thereon;

(v)* where applicable, the pages, columns or lines where the relevant passages appear, or the relevant figures of the drawings;

(vi)* the name of the patentee or applicant.

(The following example illustrates the citation of a patent document according to paragraph (a) above: JP, B, 50-14535, published 1975, May 28, see column 4, lines 3 to 27, NCR Corporation.)

(b) In the case of a book or other separately issued publication:

(i) the name of the author;

(ii) the title (including, where applicable, the number of the edition and/or volume);

(iii) the year of publication, the pages;

(iv)* the name of the publisher (in the case of company publications, the name and postal address of the company);

(v)* as far as available, the place of publication (where only the location of the publisher appears on the book or other separately issued publications, then that location shall be indicated as the place of publication);

(vi)* where applicable, the pages, columns or lines where the relevant passages appear, or the relevant figures of the drawings.

(The following example illustrates the citation of a book or other separately issued publication according to paragraph (b) above: H. Walton, 'Microwave Quantum Theory,' Volume 2, published 1973, by Sweet and Maxwell (London), see pages 138 to 192, especially pages 146 to 148.)

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* These elements are to be indicated only in a search report.

(c) In the case of an article published in a periodical or other serial publication:

(i) the title of the periodical or other serial publication;

(ii) the number of the volume and the date of the issue in which the article appears;

(iii) as far as available, the place of publication (where only the location of the publisher appears in the periodical or other serial publication, then that location shall be indicated as the place of publication);

(iv) the author and the title of the article and the number of the pages on which the article starts and ends;

(v) where applicable, the pages, columns or lines where the relevant passages appear, or the relevant figures of the drawings.

(The following example illustrates the citation of an article published in a periodical or other serial publication according to paragraph (c) above: IBM Technical Disclosure Bulletin, Volume 17, No. 5, issued 1974, October (Armonk, New York), J.G. Drop 'Integrated Circuit Personalization at the Module Level,' see pages 1344 to 1345.)

(d) In the case of an abstract:

(i) the identification of the document containing the abstract in the manner set forth in paragraphs (a), (b) and (c), respectively, depending upon whether the abstract is contained in a patent document, in a book or other separately issued publication, or in an article published in a periodical or other serial publication;

(ii) in the case where the abstract is not published together with the full text document which served as its basis, the identification of both abstract and full text document on the basis of whatever bibliographic data may be available in respect thereof.

(The following example illustrates the citation of an abstract according to paragraph (d)(ii) above: Chemical Abstracts, Volume 75, No. 20, issued 1971, November 15 (Columbus, Ohio, USA), D.I. Shetulov, 'Surface Effects During Metal Fatigue,' see page 163, column 1, the abstract No. 120718k, Fiz.-Khim. Mekh. Mater. 1971, 7(2), 7-11 (Russ).)

Note:

Further detailed information on the inclusion of references cited can be found in ISO Standard 3388 "Patent documents--Bibliographic references--Essential and complementary elements."

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Original: Document IC/PLC/XII/8, Annex XIII
January 1978

8. It is recommended that the code:

(a) be used for the recording of the "kind of document" in machine-readable data carriers, such as 80-column punched cards, magnetic tapes, aperture cards, etc;

(b) be used on the first page of patent documents near, preferably after, the document number, if these have been published in the sense of paragraph 6;

(c) be used in entries in official gazettes or, if all entries in a section of a gazette relate to the same kind of document at the beginning of such a section;

(d) be used for the identification of patent documents cited in "Search Reports" and "Lists of References" in patent documents (INID Number 56).

9. Code

The code is subdivided into mutually exclusive groups of letters. The groups characterize patent documents and documents specified in paragraph 3. Groups 1-5 comprise one or several letters enabling identification of documents pertaining to different publication levels.

Group 1 Use for primary or major series of patent documents

| | |
|---|---|
| A | First publication level |
| B | Second publication level |
| C | Third publication level |

Group 2 Use for secondary series of patent documents

| | |
|---|---|
| E | First publication level |
| F | Second publication level |
| G | Third publication level |

Group 3 Use for further series of patent documents, as the special requirements of each Office may be

| | |
|---|---|
| H | |
| I | |
| T | Publication, for information or other purposes, of the translation of the whole or part of a patent document already published by another office or organization |

Group 4 Use for major special types of patent documents

| | |
|---|---|
| M | Medicament patent documents |
| P | Plant patent documents |
| S | Design patent documents |

Group 5 Use for utility model documents having a numbering series other than the documents of Group 1

| | |
|---|---|
| U | First publication level |
| V | Second publication level |
| Z | Third publication level |

Group 6 Other (see paragraph 3)

| | |
|---|---|
| N | Non-patent literature documents |
| X | Documents restricted to the internal use of Offices |

Annex 8

BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENTAMT

(12) **Offenlegungsschrift**

(11) **DE 3624344 A1**

(51) Int. Cl. 4: B60T 8/32

(21) Aktenzeichen: P 36 24 344.2
(22) Anmeldetag: 18. 7. 86
(43) Offenlegungstag: 28. 1. 88

DE 3624344 A1

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(61) Zusatz zu: P 36 01 914.3

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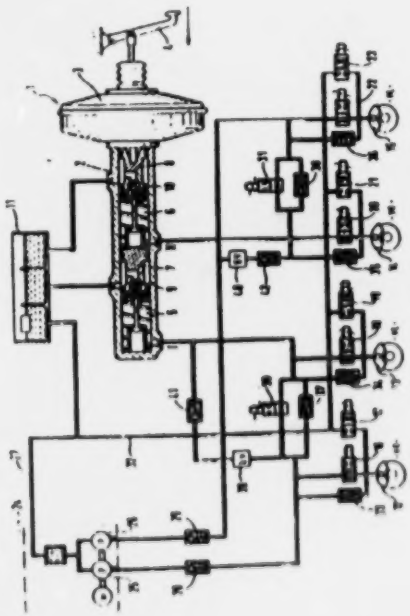
(56) Für die Beurteilung der Patentfähigkeit in Betracht zu ziehende Druckschriften:

DE-OS 35 27 190
DE-OS 35 05 410
DE-OS 34 04 135
DE-OS 32 47 492

(54) **Bremsanlage mit Schlupfregelung für Kraftfahrzeuge mit einer angetriebenen und einer nicht angetriebenen Achse**

Eine Bremsanlage mit Schlupfregelung nach dem Hauptpatent (Patentanmeldung P 3601914.3) besitzt einen Hauptzylinder (2), an dessen Arbeitskammern (5, 6) über Einlaß-/Auslaßventilpaare (16-23) die Radbremsen (12-15), über ein Regelventil (9, 10) ein Druckausgleichsbehälter (11) und außerdem ein Hilfsdruck-Versorgungssystem (24) angeschlossen sind. Über in der Ruhestellung auf Durchlaß geschaltete, während Antriebsschlupfregelung umschaltbare Mehrwegeventile (ASR-Ventile 30, 31) sind die Einlaßventile (16, 22) der angetriebenen Räder (HR, HL) und das Hilfsdruck-Versorgungssystem (24) an die Arbeitskammern (5, 6) des Hauptzylinders (2) angeschlossen. Die Einlaßventile (18, 20) der nicht angetriebenen Räder (VL, VR) sind direkt mit den Arbeitskammern (5, 6) verbunden.
Durch ein Überdruckventil (39, 41; 40, 42) oder durch zeitweises Umschalten der ASR-Ventile (30, 31) wird der Hilfsdruck in der Antriebsschlupf-Regelphase auf den maximal erforderlichen Druck begrenzt.



DE 3624344 A1

## Patentansprüche

1. Bremsanlage mit Schlupfregelung für Kraftfahrzeuge mit einer angetriebenen und einer nicht angetriebenen Achse, mit einem Hauptzylinder, an dessen Arbeitskammer ein Druckmittelvorrats- und Druckausgleichsbehälter, ein in den Regelphasen einschaltbares Hilfsdruck-Versorgungssystem und Radbremsen angeschlossen sind, wobei im Anschluß der Arbeitskammer an den Behälter ein Regelventil vorgesehen ist, das in der pedalseitigen Endlage des Hauptzylinder-Kolbens zum Behälter hin offen ist, das bei Bremsenbetätigung und ausgeschalteter Hilfsdruckversorgung schließt und das beim Einsteuern von Druckmittel aus dem Hilfsdruck-Versorgungssystem einen zur Pedalkraft proportionalen Druck in der Arbeitskammer des Hauptzylinders aufrechterhält, nach Patent... (Patentanmeldung P 36 01 914.3), **dadurch gekennzeichnet**, daß die Räder *(VR, VL,HR, HL)* über radindividuelle und/oder achsindividuelle Einlaß- und Auslaßventile (16—23) mit dem Hauptzylinder (2) und mit dem Behälter (11) verbunden sind, daß zur Antriebsschlupfregelung in den Druckmittelwegen von dem Hauptzylinder (2) zu den Einlaßventilen (16, 22) der angetriebenen Räder *(HR, HL)* jeweils ein weiteres, in der Ruhestellung offenes, während der Antriebsschlupfregelung auf Sperren umschaltbares Mehrwegeventil (30, 31) eingefügt ist und daß jeweils zwischen dem Einlaßventil (16, 22) des angetriebenen Rades *(HR, HL)* und dem während der Antriebsschlupfregelung auf Sperren umschaltbaren Mehrwegeventil (30, 31) das Hilfsdruck-Versorgungssystem (24) über ein Rückschlagventil (28, 29) angeschlossen ist.

2. Bremsanlage nach Anspruch 1, dadurch gekennzeichnet, daß der Hauptzylinder (2) als Tandem-Hauptzylinder ausgebildet ist, an dessen Bremskreise (I, II) jeweils ein Vorder- und ein Hinterrad *(VL, HR; VR, HL)* angeschlossen sind.

3. Bremsanlage nach Anspruch 2, dadurch gekennzeichnet, daß die beiden Bremskreise (I, II) des Tandem-Hauptzylinders (2) diagonal aufgeteilt sind.

4. Bremsanlage nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß das Hilfsdruck-Versorgungssystem (24) im wesentlichen aus zwei hydraulisch getrennten Pumpen (25, 26) mit gemeinsamen, elektromotorischem Antrieb besteht, von denen jede Pumpe (25, 26) an einen Bremskreis (I, II) des Tandem-Hauptzylinders (2) angeschlossen ist.

5. Bremsanlage nach einem der Ansprüche 1—4, dadurch gekennzeichnet, daß den Einlaßventilen (16, 18, 20, 22) jeweils ein in der Druckabbaurichtung sich öffnendes Rückschlagventil (33—36) parallel geschaltet ist.

6. Bremsanlage nach einem der Ansprüche 1—5, dadurch gekennzeichnet, daß dem während der Antriebsschlupfregelung auf Sperren umschaltbaren Mehrwegventil (30, 31) ein Überdruckventil (39, 41; 40, 42), das auf den zur Antriebsschlupfregelung maximal benötigten Druck ausgelegt ist, parallel liegt.

7. Bremsanlage nach einem der Ansprüche 1—5, dadurch gekennzeichnet, daß der Hilfsdruck während der Antriebsschlupfregelung durch zeitweises oder periodisches, durch Ansteuerpulse ausgelöstes Öffnen des während der Antriebsschlupfregelung auf Sperren umschaltbaren Mehrwegeventils (30, 31) auf den zur Antriebsschlupfregelung maximal benötigten Druck begrenzbar ist.

8. Bremsanlage nach einem der Ansprüche 1—5, dadurch gekennzeichnet, daß der Hilfsdruck während der Antriebsschlupfregelung durch zeitweises oder periodisches, durch Ansteuerpulse ausgelöstes Öffnen des dem angetriebenen Rad *(HR, HL)* zugeordneten Auslaßventils (17, 23) begrenzbar ist.



## Beschreibung

Die Erfindung bezieht sich auf eine schlupfgeregelte, für Kraftfahrzeuge mit einer angetriebenen und einer nicht angetriebenen Achse vorgesehenen Bremsanlage mit einem Hauptzylinder, an dessen Arbeitskammer ein Druckmittelvorrats- und Druckausgleichsbehälter, ein in den Regelphasen einschaltbares Hilfsdruck-Versorgungssystem und Radbremsen angeschlossen sind, wobei im Anschluß der Arbeitskammer an den Behälter ein Regelventil vorgesehen ist, das in der pedalseitigen Endlage des Hauptzylinder-Kolbens zum Behälter hin offen ist, das bei Bremsenbetätigung und ausgeschalteter Hilfsdruckversorgung schließt und das beim Einsteuern von Druckmittel aus dem Hilfsdruck-Versorgungssystem einen zur Pedalkraft proportionalen Druck in der Arbeitskammer des Hauptzylinders aufrechterhält, nach Patent ...(Patentanmeldung P 36 01 914.3).

Die in dem zugehörigen Hauptpatent (Patentanmeldung P 36 01 914.3) beschriebene hydraulische Bremsanlage besitzt einen Hauptzylinder mit vorgeschaltetem Unterdruck-Bremskraftverstärker und ist mit einem Hilfsdruck-Versorgungssystem ausgerüstet. An jede Arbeitskammer im Hauptzylinder sind eine oder mehrere Radbremsen, das Hilfsdruck-Versorgungssystem und über ein Regelventil ein Druckausgleichsbehälter angeschlossen. In der pedalseitigen Endlage, die der Kolben im Hauptzylinder bei nicht betätigter Bremse einnimmt, ist dieses Ventil offen und stellt eine Verbindung zu dem Behälter her. Bei Bremsbetätigung schließt das Ventil und bleibt geschlossen, solange der durch die Pedalbetätigung ausgelöste Druck in der Arbeitskammer des Hauptzylinders geringer als der Hilfsdruck ist. Beim Einsetzen der Schlupfregelung wird das Hilfsdruck-Versorgungssystem eingeschaltet und führt zur Einsteuerung von Druckmittel in die Arbeitskammer. Der Kolben im Hauptzylinder wird dadurch in seiner Endlage zurückgestellt. Das Regelventil wird so weit bzw. solange geöffnet, bis die Kräfte am Kolben wieder im Gleichgewicht sind. Daher herrscht auch nach dem Einschalten des Hilfsdruck-Versorgungssystems in der Arbeitskammer ein geregelter, zur Pedalkraft proportionaler Druck. Mit Hilfe von umschaltbaren Mehrwegeventilen, nämlich Einlaß- und Auslaßventilen, die in den Druckmittelwegen von den Radbremsen zu dem Hauptzylinder und zu dem Behälter eingefügt sind, wird der Bremsdruck beim Instabilwerden eines Rades variiert und dadurch der Bremsschlupf geregelt. Zur Antriebsschlupfregelung ("ASR") ist diese Anlage nicht geeignet.

Es ist auch schon eine Bremsanlage mit hydraulischem Bremskraftverstärker bekannt, bei der zur Antriebsschlupfregelung die Radbremsen über Mehrwegeventile direkt an das Hilfsdruck-Versorgungssystem anschaltbar sind (DE-OS 34 07 538). Da es sich dabei um einen zweikreisigen Bremsdruckgeber handelt, an dessen Kreise jeweils ein angetriebenes und ein nicht angetriebenes Rad angeschlossen sind, wird über ein zusätzliches Mehrwegeventil in der Antriebsschlupfregelphase der Druckmittelweg zu dem nicht angetriebenen Rad

perrt. Anlagen dieser Art sind relativ aufwendig.

Des weiteren wurde bereits vorgeschlagen, eine Bremsanlage mit einem Tandem-Hauptzylinder, dem ein Unterdruck-Bremskraftverstärker vorgeschaltet ist, zu verwenden und diese Anlage mit einem nur während der Regelphasen eingeschalteten Hilfsdruck-Versorgungssystem auszurüsten, das mit Hilfe von Mehrwegeventilen anstelle des Bremsdruckgebers an die Radbremsen anschaltbar ist, (Patentanmeldung P 35 27 190.6). Auch diese Bremsanlage benötigt eine recht aufwendige Ventilanordnung.

Der vorliegenden Erfindung liegt die Aufgabe zugrunde, eine Bremsanlage der eingangs genannten Art mit geringem Aufwand an Bauteilen zu einem System zu erweitern, das nicht nur den Bremsschlupf, sondern auch den Antriebsschlupf regelt.

Es hat sich nun gezeigt, daß diese Aufgabe in überraschend einfacher, technisch fortschrittlicher Weise mit einer Bremsanlage nach dem Hauptpatent dadurch gelöst werden kann, das die Räder über radindividuelle und/oder achsindividuelle Einlaß- und Auslaßventile mit dem Hauptzylinder und mit dem Behälter verbunden sind, daß zur Antriebsschlupfregelung in den Druckmittelwegen von dem Hauptzylinder zu den Einlaßventilen der angetriebenen Räder jeweils ein weiteres, in der Ruhestellung offenes, während der Antriebsschlupfregelung ("ASR") auf Sperren umschaltbare Mehrwegeventil eingefügt ist und daß jeweils zwischen dem Einlaßventil des angetriebenen Rades und dem während der Antriebsschlupfregelung auf Sperren umschaltbaren Mehrwegeventil das Hilfsdruck-Versorgungssystem über ein Rückschlagventil angeschlossen ist.

Mit der erfindungsgemäßen Bremsanlage läßt sich mit Hilfe der einzelnen Einlaß-/Auslaßventilpaare der Bremsdruck an den Rädern individuell regeln. Werden die Vorderräder an einen Bremskreis, die Hinterräder an den zweiten Bremskreis angeschlossen, ist eine gemeinsame Regelung des Bremsdruckes an der Hinterachse, vorzugsweise nach dem Select-low-Prinzip, über ein gemeinsames Einlaß-/Auslaßventilpaar möglich. An der Vorderachse dürfte allerdings in den meisten Fällen eine Einzelradregelung vorzuziehen sein.

Die Erweiterung zu einem System, das auch den Antriebsschlupf regelt, wird praktisch mit nur einem zusätzlichen Mehrwegeventil pro Bremskreis erreicht. Die beschriebene Bremsanlage nach der Erfindung besitzt dabei den wesentlichen Vorteil, daß auch während einer Antriebsschlupfregelung bei Bremsbetätigung sofort Bremsdruck in die nicht angetriebenen Räder eingeleitet werden kann, ohne daß zuvor die Antriebsschlupfregelphase beendet sein muß.

Nach einer vorteilhaften Ausführungsart der Erfindung ist der Hauptzylinder als Tandem-Hauptzylinder ausgebildet, an dessen Bremskreise jeweils ein Vorder- und ein Hinterrad, vorzugsweise mit diagonaler Bremskreisaufteilung, angeschlossen sind. Ein sogen. Schwarz/weiß-Aufteilung, d. h. Anschluß der beiden Räder einer Achse an den einen, der Räder der anderen Achse an den anderen Bremskreis, ist ebenfalls möglich.

Zur Hilfsdruckversorgung können nach einer weiteren Ausführungsart der Erfindung zwei hydraulisch getrennte, mit Hilfe eines gemeinsamen Elektromotors angetriebene Hydraulikpumpen eingesetzt werden, von denen jeweils eine an einen der beiden Bremskreise angeschlossen ist.

Den Einlaßventilen können in Druckabbaurichtung sich öffnende Rückschlagventile parallel geschaltet sein, um bei Beendigung der Bremse den Druckabbau zu beschleunigen, und zwar auch bei verzögerter Zurückschaltung des Einlaßventils.

Zur Antriebsschlupfregelung wird ein wesentlich geringerer Hilfsdruck als zur Bremsschlupfregelung benötigt. Daher ist es nach einer Ausführungsart der Erfindung vorgesehen, dem Mehrwegeventil, das während der Antriebsschlupfregelphase auf Sperren umschaltbar ist, ein Überdruckventil parallel zu schalten, welches auf den zur Antriebsschlupfregelung maximal benötigten Druck ausgelegt ist. Andererseits ist es auch möglich, durch zeitweises oder periodisches, durch Ansteuerpulse ausgelöstes Öffnen dieses Mehrwegeventils während der Antriebsschlupfregelung den Hilfsdruck auf den benötigten Maximalwert zu begrenzen. Die Druckbegrenzung auf dem niedrigeren, für die Antriebsschlupfregelung benötigten Niveau läßt sich auch durch zeitweises oder periodisches Umschalten des dem angetriebenen Rad zugeordneten Auslaßventils erreichen.

Weitere Merkmale, Vorteile und Anwendungsmöglichkeiten der Erfindung gehen aus der folgenden Beschreibung anhand der Abbildung eines Ausführungsbeispiels der Erfindung hervor.

In dieser Abbildung sind in vereinfachter, teilweise schematischer Darstellung die wichtigsten Komponenten einer erfindungsgemäßen Bremsanlage und die hydraulische Zusammenschaltung dieser Komponenten wiedergegeben.

Nach der Abbildung besitzt die Bremsanlage einen Bremsdruckgeber **1**, der sich aus einem Tandem-Hauptzylinder **2** und einem vorgeschalteten Unterdruck-Bremskraftverstärker **3**, auf den über ein Pedal **4** die Bremskraft ausgeübt wird, zusammensetzt.

Die beiden Arbeitskammern **5, 6** im Inneren des Hauptzylinders **2**, in denen bei Betätigung der Bremse bzw. des Bremspedales **4** mit Hilfe der beiden Hauptzylinderkolben, nämlich des Druckstangenkolbens **8** und des Zwischenkolbens **7** Bremsdruck aufgebaut wird, sind jeweils über ein als Zentralventil ausgebildetes Regelventil **9, 10** mit einem Druckmittelvorrats- und Druckausgleichsbehälter **11** verbunden. Außerdem sind an diese Kammern **5, 6** über hydraulisch getrennte Bremskreise I, II die Radbremsen angeschlossen, und zwar im vorliegenden Fall in diagonaler Aufteilung. Der Bremskreis I führt zu dem linken Vorderrad *VL* und dem rechten Hinterrad *HR*, der Bremskreis II zu den beiden anderen Rädern *VR, HL*.

Jedem Rad ist im dargestellten Ausführungsbeispiel der Erfindung ein Einlaß- und ein Auslaßventil **16, 17**; **18, 19**; **20, 21**; und **20, 23** zugeordnet. Somit kann mit diesen Ventilen der Bremsdruck radindividuell gesteuert bzw. geregelt werden.

Außerdem ist die Bremsanlage mit einem Hilfsdruck-Versorgungssystem **24** ausgerüstet, das im wesentlichen nur aus einer elektromotorisch angetriebenen Hydraulikpumpe oder, wie hier, aus zwei Hydraulikpumpen **25, 26**, die durch einen gemeinsamen Elektromotor *M* angetrieben werden, besteht. Der an sich auch zum Hilfsdruck-Versorgungssystem **24** gehörende Druckmittelbehälter ist in dem dargestellten Ausführungsbeispiel zu einer Einheit mit dem Behälter **11** des Tandem-Hauptzylinders **2** zusammengefaßt. Der Behälter **11** ist über eine Druckmittelleitung **27** an die Saugseiten der Hydraulikpumpen **25, 26** angeschlossen.

Über ein ein Rückschlagventil **28** bzw. **29** und über ein in der Ruhestellung offenes, d. h. auf Durchlaß geschaltetes Mehrwegeventil **30** bzw. **31** ist die Druckseite jeder Pumpe **25** bzw. **26** mit einem der beiden Bremskreise I, II und damit mit den Arbeitskammern **5** bzw. **6** des

Hauptzylinders 2 verbunden. Die Rückschlagventile 28, 29 verhindern einen Druckmittelfluß zur Druckseite der Pumpen 25, 26 hin. Die Mehrwegeventile 30, 31 sind nur in der Antriebsschlupfregelphase gesperrt, und zwar ständig oder zeitweise; dies wird später erklärt.

Es handelt in dem dargestellten Ausführungsbeispiel um ein Fahrzeug mit Hinterradantrieb. Die Pumpenanschlüsse bzw. die Anschlüsse an das Hilfsdruck-Versorgungssystem 24 führen daher über die Rückschlagventile 28, 29 jeweils direkt zu dem Einlaßventil 16 bzw. 22 des Hinterrades *HR, HL*, und über das in der Antriebsschlupfregelphase umschaltbare Mehrwegeventil 30 bzw. 31 zu dem Einlaßventil 18 bzw. 22 des nicht angetriebenen Vorderrades *VL* bzw. *VR*. Die nicht angetriebenen Räder *VL, VR* bzw. deren Einlaßventile 18, 20 sind somit direkt, d. h. ohne zwischengeschaltete Ventile, an die Arbeitskammern 5 bzw. 6 des Hauptzylinders 2 hydraulisch angeschlossen.

Die radindividuellen Auslaßventile 17, 19, 21, 23, geben nach dem Umschalten in ihre zweite Schaltposition über eine gemeinsame Druckmittel-Rückflußleitung 32 einen Druckmittel-Rückflußweg zu dem Behälter 11 frei.

Den Einlaßventilen 16, 18, 20, 22 ist jeweils ein Rückschlagventil 33 bis 36 parallel geschaltet, um beim Lösen der Bremse einen schnellen, unverzögerten Druckabbau sicherzustellen.

Den Mehrwegeventilen 30, 31 im Druckmittelweg von dem Hilfsdruck-Versorgungssystem 24 zu dem nicht angetriebenen Rad *VL, VR* sind ebenfalls Rückschlagventile 37, 38 parallel geschaltet, über die bei Bremsenbetätigung, wenn das ASR-Ventil 30, 31 beispielsweise wegen eines Defektes hängen sollte, Bremsdruck zu den Einlaßventilen 16, 22 der angetriebenen Hinterräder *HR, HL* eingesteuert werden kann. In der Praxis kann auf dieses Rückschlagventil verzichtet werden.

Ferner ist den Mehrwegeventilen 30, 31, die im Antriebsschlupfregelfall umgeschaltet werden, den sogen. ASR-Ventilen, jeweils noch ein Überdruckventil 39, 40 parallel geschaltet, das auf den maximal zur Antriebsschlupfregelung benötigten Hilfsdruck, der wesentlich geringer ist als der für die Bremsschlupfregelung benötigte Druck, ausgelegt ist. Die nachgeschalteten Rückschlagventile 41, 42 symbolisieren die Wirkungsrichtung des Überdruckventils. Die Funktion dieser Überdruckventile 39, 40 kann auch durch zeitweises oder gepulstes Zurückschalten des ASR-Ventils 30 bzw. 31 in die Durchlaßstellung verwirklicht werden. Eine Druckbegrenzung im Antriebsschlupfregelfall läßt sich außerdem durch zeitweises oder gepulstes Umschalten der Auslaßventile 17, 23, die den angetriebenen Rädern zugeordnet sind, erreichen.

Die Regelventile 9, 10 im Hauptzylinder 2 sind, wie übliche Zentralventile, geöffnet, wenn sich die beiden Kolben 7, 8 bei nicht betätigter Bremsanlage und ausgeschaltetem Hilfsdruck-Versorgungssystem 24 in ihrer pedalseitigen Endlage befinden. Der Druckmittelweg von den Arbeitskammern 5, 6 zu dem Behälter 11 ist in dieser Position offen. Bei Bremsbetätigung rücken die Kolben 7, 8 vor und verschließen den Druckmittelweg von den Kammern 5, 6 zum Behälter 11. Wird nun jedoch Hilfsdruck aus dem Versorgungssystem 24 über die ASR-Ventile 30, 31 in die Arbeitskammern 5, 6 eingesteuert, treten die Regelventile 9, 10 in Funktion. Durch den Hilfsdruck werden die Kolben 7, 8 entgegen der auf das Bremspedal 4 ausgeübten, durch Hilfskraft im Unterdruck-Verstärker unterstützten Bremskraft zurückgestellt. Die Regelventile 9, 10 geben den Druckmittelweg zu dem Behälter 11 so weit und so lange frei, bis sich das Druckgleichgewicht an den beiden Hauptzylinderkolben 7, 8 wieder einstellt. Folglich herrscht in den Arbeitskammern 5, 6 ein geregelter Druck, der zu der auf das Pedal 4 ausgeübten Kraft proportional ist.

Die dargestellte Bremsanlage nach der Erfindung besitzt folgende Wirkungsweise:

Bei normalen, d. h. ungeregelten Bremsvorgängen bleiben alle Ventile in der dargestellten Ruhelage. Das Hilfsdruck-Versorgungssystem 24 ist ausgeschaltet. Der in den Arbeitskammern 5, 6 durch die Pedalbetätigung hervorgerufene Bremsdruck wird über die Einlaßventile 16, 18, 20, 22 an die Radbremsen 12 bis 15 angelegt, wobei das Druckmittel zu den Radbremsen 12, 15 der angetriebenen Hinterräder noch über die ASR-Ventile 30, 31 fließt.

Tritt eine Blockiertendenz auf, wird der Motor *M* der Hydraulikpumpen 25, 26 eingeschaltet, so daß, sobald der Hilfsdruck über den durch die Pedalbetätigung ausgelösten Druck in den Kammern 5, 6 ansteigt, die Regelventile 9, 10 in Funktion treten. Durch Abfluß eines entsprechenden Teils des von den Pumpen 25, 26 geförderten Druckmittels in den Behälter 11 wird der zur Fußkraft proportionale Druck in den Kammern 5, 6 aufrechterhalten. Mit Hilfe der Einlaß-/Auslaßventilpaare 16, 17; 18, 19; 20, 21 und 22, 23 wird der Bremsdruck radindividuell geregelt, d. h. abgebaut, konstantgehalten und zur gegebenen Zeit wieder erhöht.

Bei zu hohem Antriebsschlupf wird ebenfalls das Hilfsdruck-Versorgungssystem 24 eingeschaltet. Gleichzeitig werden die ASR-Ventile 30, 31 umgeschaltet, so daß der Hilfsdruck ausschließlich über die Einlaßventile 16, 22 zu den Radbremsen 12, 15 der angetriebenen Hinterräder gelangen kann. Der maximale Hilfsdruck am Eingang dieser Einlaßventile 16, 22 wird durch die Überdruckventile 39, 40 begrenzt, die, sobald der Hilfsdruck über den maximal zur Antriebsschlupfregelung benötigten Druck ansteigt, öffnen und einen Druckmittelweg über die Rückschlagventile 41, 42, über die drucklosen Arbeitskammern 5, 6 zu dem Behälter 11 freigeben. Durch zeitweises oder gepulstes Ansteuern der ASR-Ventile 30, 31 kann ebenfalls der Hilfsdruck in dieser Regelphase auf den maximal benötigten Wert begrenzt werden. Ähnliches läßt sich, wie bereits angedeutet, mit Hilfe der Auslaßventile 17, 23 erreichen.

Auch in der Antriebsschlupf-Regelphase läßt sich der Bremsdruck in den Radbremsen 12, 15 der angetriebenen Hinterräder mit Hilfe der zugehörigen Einlaß-/Auslaßventilpaare 16, 17; 22, 23 radindividuell regeln. Die nicht angetriebenen Räder *VL, VR* sind weiterhin an den drucklosen Hauptzylinder 2 angeschlossen, so daß in dieser Phase in die Radbremsen 13, 14 der Räder *VR, VL* kein Bremsdruck eingesteuert werden kann.

Ein wichtiger Vorteil der erfindungsgemäßen Bremsanlage besteht darin, daß bei einer Bremsenbetätigung und noch nicht abgeschlossener Antriebsschlupf-Regelphase sofort die Bremsenwirkung an den nicht angetriebenen Rädern *VL, VR* einsetzt, weil sich in den Druckmittelwegen zu diesen Rädern außer den Einlaßventilen 18, 20, die in der Antriebsschlupf-Regelphase in ihrer Ruhelage bleiben, kein weiteres Ventil befindet.

Trotz des einfachen Aufbaus und der relativ wenigen Bauteile ist also mit der erfindungsgemäßen Bremsanlage eine radindividuelle Bremsdrucksteuerung sowohl in der Bremsschlupf- als auch in der Antriebsschlupf-Regelphase möglich.

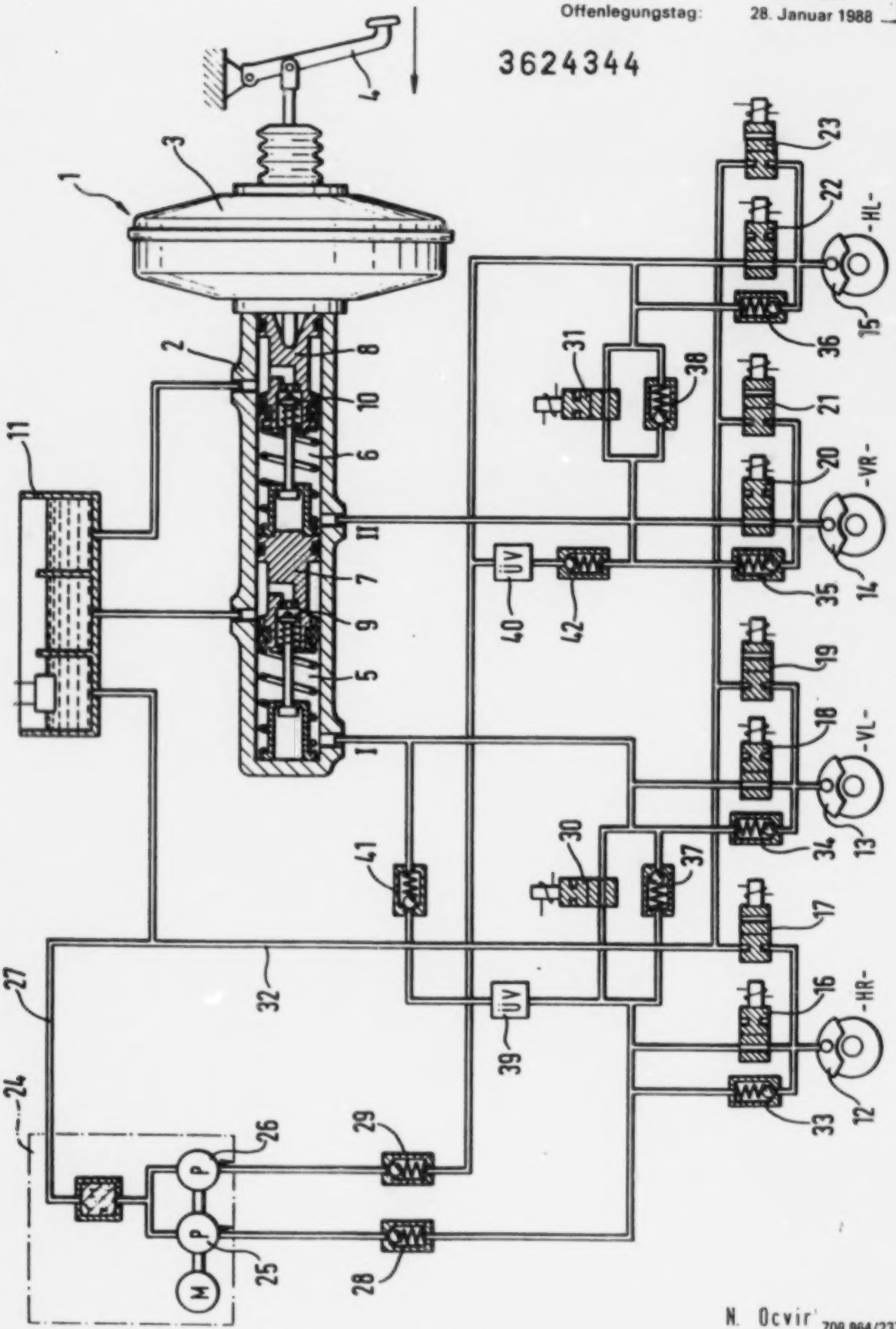
Die für Bremsanlagen der beschriebenen Art benö-

...en elektrischen Bauteile, insbesondere die Radsenso-...n, mit denen das Raddrehverhalten ständig erfaßt wird, sowie die elektronischen Schaltkreise zur Auswertung der Sensorsignale und zur Erzeugung von elektrischen Umschalt- oder Stellsignalen für die dargestellten und beschriebenen, elektromagnetisch betätigbaren Mehrwegeventile sowie zum Ein- und Ausschalten des Antriebsmotors *M* der Hydraulikpumpen sind zugunsten einer besseren Übersichtlichkeit und eines besseren Verständnisses der Erfindung nicht wiedergegeben.

P 6062

Nummer: 36 24 344
Int. Cl.⁴: B 60 T 8/32
Anmeldetag: 18. Juli 1986
Offenlegungstag: 28. Januar 1988

3624344

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1988

080 - ADM - 4 - E

# NEWSPAPER AS A TOOL IN EDUCATIONAL RESEARCH IN NIGERIA

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IR052719

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## ABSTRACT

The importance of newspaper as an essential tool in educational research is explored by eliciting responses from researchers in education at the University of Ibadan Nigeria through the use of questionnaire. Fifty four respondents were used for the study. An analysis of the responses shows that majority of researchers in education used newspapers for research. Feature articles, news items by policy makers and editorials constitute the major portion of newspapers used for research in education in Nigeria.

## Introduction

Educational research according to Ndagi (1984) is a scientific method of controlled enquiry involving a formal systematic and intensive process of verifying knowledge that will help educationists achieve their goals. It provides the framework within which the process and the products of educational system could be brought under critical questioning and critical justification.

Researchers in education will therefore need to consult relevant literature in order to carry out any meaningful research. The materials that constitute the literature are generally, journal articles, textbooks, theses and dissertations, government publications such as pamphlets and monographs from various government and quasi-governmental agencies that have a rich source of information such as statistical data, research studies, official reports and laws. However, while there seems to be a consensus on the importance of these research materials in educational research there is an important research material that is hardly mentioned in Nigeria and this is the Newspaper. There is yet to be an empirical study on the value of newspaper as a tool in educational research in Nigeria. The importance of newspaper as a research tool in developed countries is readily recognised. Lattood (1967) said there was no need to justify the research value of newspapers because according to him an examination of the statistics of reader use of newspapers at the Library of Congress, United States of America shows that 3,000 readers

per month use 8,000 unbound issues, 1,500 bound volumes and 6,000 reels of microfilm. This is because newspapers serve as primary sources of information, containing current news such as official statements and speeches, new laws or decrees, defence statements, discussion politics, education and government. They sometime remain as the only source of information, especially in Nigeria where books are not readily available. Newspapers regularly cover reports on various topics on education including feature articles hence there is a need to ascertain the value of a newspaper as a research tool in education in Nigeria. This is the justification for this study.

Methodology

In order to attain the objective of this study two instruments appear appropriate. These are citation studies and the use of questionnaire. Citation studies involve the analysis of the citations used by researchers in education. This will enable one to determine the proportion of newspapers used in carrying out educational research studies. This approach is however subjective in that researchers may not want to list newspaper as one of the references used in conducting their research studies because of the erroneous belief in academic circles that it is not an important research tool. The other alternative, the use of questionnaire is preferred because one is in a position to elicit the value of newspaper as a tool in educational research from researchers themselves since there is no compulsion

to state their names on the questionnaire.

The Scope

This study covers faculty members in the Faculty of Education, University of Ibadan. The Faculty is the oldest and largest in the country. It has the highest number of faculty members and research students amongst Nigerian universities. As a matter of fact, most faculty members in other faculties of education and other researchers in education in Nigeria are in one way or the other linked with the Faculty of Education, University of Ibadan either as former undergraduates, postgraduates or faculty members. Thus a study of the faculty members in the Faculty of the Education, University of Ibadan will be truly representative of researchers in education in Nigeria. At the time the study was carried out during the 1985/86 session, copies of the questionnaire designed were distributed to eighty four faculty members. After a period of three months, there were fifty four respondents representing 67.5% returns. The respondents were made up of 7 professors, 11 senior lecturers and 36 lecturers.

Analysis of Results and Discussions

The areas of specialisation of respondents were as varied as their interests. Table 1 shows the number of respondents for each area of specialisation. Of the 13 areas mentioned, curriculum and instruction, guidance and counselling, and librarianship seem to be the most mentioned areas, as the three areas constitute about 40 percent of the total number of areas mentioned. Other areas relatively mentioned

are educational evaluation, special education, industrial education and physical and health education. This range of specialisations demonstrates the variety of courses in which research is being carried out in the Faculty of Education, University of Ibadan.

Use of Newspapers in Research Studies

Eight or (14.8%) of the respondents used newspapers regularly for research. A substantial proportion of the respondents 44 or (81.5%) occasionally used newspapers for research and two respondents or (3.7%) reported that they had never used newspapers for research. A further

Table 1. Frequency Distribution of Respondents By Area of Specialisation

| Area of specialisation | Number of Respondents | Frequency Percentage |
|---|---|---|
| Curriculum and Instruction | 8 | 14.8 |
| Guidance and Counselling | 8 | 14.8 |
| Librarianship | 6 | 11.1 |
| Educational Evaluation | 5 | 9.3 |
| Industrial Education | 4 | 7.4 |
| Special Education | 4 | 7.4 |
| Physical and Health Education | 4 | 7.4 |
| Education Technology | 3 | 5.5 |
| Educational Management | 3 | 5.5 |
| Information Science | 3 | 5.5 |
| Adult Education | 3 | 5.5 |
| Early Childhood | 2 | 3.7 |
| Community Development | 1 | 1.9 |

N = 54

analysis reveals that all the categories of respondent regularly/ occasionally used newspapers for research as depicted in Table 2.

Table 2 Distribution of Respondent by Status in the use of Newspapers

| Status | Frequency of Respondents using Newspapers Regularly | Frequency of Respondents using Newspapers occasionally | Frequency of Respondents not using Newspapers | Frequency Percentage of Respondents using Newspapers Regularly/ Occasionally |
|---|---|---|---|---|
| Professors | 3. | 3 | 1 | 85.7 |
| Senior Lecturers | 3 | 8 | - | 100 |
| Lecturers | 2 | 33 | 1 | 97.2 |

When respondents were asked the reasons for making use of newspapers regularly/occasionally for research, a variety of reasons were postulated. Prominent among these reasons were that newspapers contain up to date information (51.9%) they give background information (42.6%), they are the only sources of information on certain aspects of research (35.2%). Table 3 presents a variety of reasons mentioned.

Table 3. Frequency Percentage of Reasons for Using Newspapers for Research

| Reason | Frequency | Relative Percentage |
|---|---|---|
| They contain up-to-date information | 28 | 51.9 |
| They give background information | 23 | 42.6 |
| They are the only sources of information on certain aspects of research | 19 | 35.2 |
| They provide some relevant information | 3 | 5.5 |

N = 54

Since educational problems are dynamic, it is not surprising that majority of the researches used newspaper for research because they contain up-to-date information. The historical sequence of events as regularly depicted in newspapers appears strong, as a substantial number of respondents used newspapers because they give back ground information.

As expected, various portions of newspapers are used for educational research. Feature articles, news items by educational policy makers and editorials, represent the major portions of newspapers used for educational research. Table 4 shows the relative use of the various portions of newspapers for educational research.

Table 4 Relative Distribution of the Portion of Newspapers Used for Research By Respondents

| Portion of Newspapers | Frequency | Relative Percentage |
|---|---|---|
| Feature articles | 40 | 74.0 |
| News items by educational policy makers | 34 | 63.0 |
| Editorials | 30 | 55.6 |
| Supplements on educational institutions | 22 | 40.7 |
| Adverts | 6 | 11.1 |
| Sports | 6 | 11.1 |
| Obituaries | 5 | 9.3 |
| Science page | 1 | 1.9 |
| Letters to Editors | 1 | 1.9 |
| Cartoons | 1 | 1.9 |

N = 54

## Conclusion

It has clearly emerged from this study that there is sufficient evidence to infer that newspapers constitute one of the tools used by researchers in education in Nigeria. It is therefore necessary that libraries should emphasise on the collection and organisation of newspaper information. They should also provide avenue for the dissemination of research materials contained in newspapers to researchers in education. This could be achieved either by newspaper indexing or newspapers cuttings.

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1988

081-ADM-5-E

# BIBLIOGRAPHIC CONTROL OF LITERATURE IN RESEARCH DISCIPLINES IN KENYA

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KEYWORD(S):

*For internal use only:*

To be brought to meeting no:

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Remarks:

To be presented orally ☐

For distribution only ☐

# BIBLIOGRAPHIC CONTROL OF LITERATURE IN RESEARCH DISCIPLINES IN KENYA

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'Research in Kenya is carried out in practically all disciplines'. This assumption is therefore bound to overrule the belief that research programmes are conducted only within limited subject areas. However, if one examined the returns from the many research activities taking place in the country, it is possible to isolate disciplines which play leading roles in research. The areas in question are science, technology, education, economics and some areas of humanities such as African history and anthropology. Before any effort is made to highlight the many bibliographic activities carried out in these disciplines, it is proper that we should in the first instance look more closely at the activities in institutions in Kenya responsible for the generation of information materials. This is so because the activities in the information generating institutions are bound to have a great influence on the work of bibliographic control institutions which will be examined at a later stage. The success of bibliographic services in Kenya greatly depend on the existing information agencies.

## Information production agencies

In Kenya, seven types of information generating agencies can be isolated. Among them are the commercial firms. There are two kinds of commercial firms. The first category comprises the publishing concerns owned and run essentially by Kenyans. Such concerns are characterized by limited capital and staffing. Much of their publishing activities are to be found in the area of school books. The second category comprises firms owned by foreign multinational companies with their headquarters in Europe and the United States. Their main activity is centred on the publication and distribution of textbooks. A few of them are engaged in the publication of scholarly works. The majority of books distributed in Kenya are in reality published and printed in the European and American capitals. Publicity materials

in the form of catalogues, brochures, bibliographies are usually produced to widen the general awareness of their titles. Much of their materials generally get the attention of bibliographers. However none of the foreign multinationals are engaged in the publication or distribution of periodicals.

The majority of the materials published by the Government Printer comprise highly technical works accruing from various ministries which arise from the many research programmes taking place in the country. Unfortunately, since the Government Printer does not issue out bibliographies for all their publications, information on their works do not reach the attention of bibliographers and librarians. The only bibliography which they have been issuing out, is the catalogue of publications destined for sale. Unfortunately, the publication of this catalogue ceased with the 1977 edition. With the exception of the titles which are occasionally advertized in the Kenya Gazette, it is hard to tell the volume of materials available for sale.

The third group of publishers comprises parastatal publishing concerns. These are semi-autonomous firms established by the Government to publish materials specifically for schools in Kenya and to encourage local authorship. Among them is the Kenya Literature Bureau and the Jomo Kenyatta Foundation. In order to perform this task effectively and still remain in business, these firms receive heavy subsidies from the Treasury.

Research institutions and Government research departments make up for another category of publishing concerns in the country. Research institutions and departments cannot be regarded conventional publishers although their material output comprise a considerable part of the national publishing output. As research institutions are engaged solely in research, much of their research findings are to be found in the form of research reports, internal reports, annual reports, etc. Some of these materials are published outside but circulated only to a limited group of people. Others are cyclostyled locally and circulated among members of staff of the institution. Much

of this collection does therefore not reach the book market or libraries where they are bound to be included in bibliographic records.

The fifth category of publishers are learned societies and associations. Kenya has a considerable number of learned societies and professional associations. Some of them publish periodicals as away of disseminating knowledge and information pertaining to their discipline. A few of these are the Kenya Medical Association, Kenya Library Association, East Africa Natural History Society, Historical Association of Kenya, etc. A number of them hold annual conferences, seminars and workshops; and during these meetings papers are delivered by participants who are authorities in their discipline. Many of the contributions emanate from recent researches the presenters might have carried out in their research programmes. Some of the papers are published later in foreign Journals, while some may appear in the form of proceedings. But a greater portion of the consignment is bound to disappear with the conference.

The sixth group of publishers comprise Universities. At present, Kenya has four accredited Universities. These are the University of Nairobi which is the oldest university institution in the country followed by Moi University in Eldoret, Kenyatta University some 16 miles from Nairobi and Egerton University in Njoro near Nakuru. Since universities have to conduct research in addition to teaching and learning, Universities have recently become focal points for research activities in the country. The result is that a lot of research programmes are taking place in the Universities particularly at Nairobi and Kenyatta Universities. The climax of this development is the publication of research findings which are eventually deposited in University libraries. In addition to the research done by the academic staff, University students both undergraduates but particularly postgraduates are required by universities to write dissertations and theses as part of their academic programme . Copies of these dissertations are deposited in the university libraries. This collection has since then become one of the richest research collections in Kenya.

The seventh category of publishing concerns are the manufacturing firms. A great number of established manufacturing concerns in Kenya conduct research programmes in various areas of production. However, unlike the scientific research institutions which publish and circulate the results of their programmes, manufacturing concerns do not publicize their findings for fear of stepping up competition. Much of their findings are contained in unpublished works the majority of which are produced locally and circulated to a limited audience who are mainly the staff of the company. The result is that much of this collection does not reach bibliographers.

## The Legal Deposit Law and its effect on research materials

In reality Kenya does not have a legal deposit law. However, the only law which appears to perform this function and which has variously been referred to as the Legal Deposit Act(1) is the Books and Newspapers Act. This law was initially established by the colonial administration in 1906 with the intention of censoring and controlling the press.(2) The major weakness of this law is that it exempts the Government Printer, Government ministries and departments, and parastatal bodies from depositing their materials. This is certainly one of the arguments this law is not regarded a legal deposit law. Its partiality has meant that the Government was only interested in keeping a close eye on materials published in the private sector where unlike the public sector, the Government had no direct control. Since Government ministries and departments plus parastatal bodies takeup a greater proportion of the national publishing output, exempting these institutions means denying the national bibliographic agency a considerable input into the national bibliography.

Another problem with this Act is that only the Registrar of Books and Newspapers has the power to administer it. Under normal circumstances, the depository libraries have no way of checking on the defaulters. This work is supposed to be carried out by the Registrar of Books and Newspapers. Unfortunately since this person is not a trained information worker and is equally not versed with the book trade, he simply has no way of doing this.

Another factor concerns the legal deposit libraries. Kenya has three legal deposit libraries namely, the Kenya National Library Service (KNLS), Nairobi University Library and the Kenya National Archives. The funny thing is that although the three libraries are considered legal deposit libraries, their status is not legally stated. Their status has not been gazetted. It therefore appears that this status was accorded to them by discretion. Their role in this regard is confined to acting simply as a storehouse for materials received. According to this law, publishers are required to deposit three copies of each title with the Registrar. The Registrar of Books and Newspapers after performing the necessary formalities, passes the materials to the three libraries possibly for safe keeping.

From the foregoing, it is evident that the present law has a lot of weakness which call for immediate revision. To overcome similar problems in the future, the present law should be replaced by a more realistic one. In drafting the new law, the exercise should be a joint venture between the lawyers and information professionals. Among the areas which should be looked into is that which requires the national bibliographic agency at KNLS to be responsible for the administration of the Act. The Legal Deposit law should complement the national bibliography. Any attempt to separate the two activities Jeopardizes the smooth running of the national bibliographic agency.

**Materials Control**

Research collections are to be found in a number of libraries and information centres in Kenya. Among them are university libraries, special libraries and to a limited extent in public libraries.

a) **Public libraries**

Among the notable public library systems in Kenya is the Kenya National Library Service (KNLS). KNLS maintains a nationwide chain of public libraries in the country. Although KNLS cannot claim to be a research library, the collection contained in one of its depart-

ments, the National Reference and Bibliographic Department (NR & BD) can be considered a research collection. Much of the collection has been built up through the legal deposit law. This department apart from acting as a national reference library, also serves as a national bibliographic agency. As a national bibliographic agency, it is charged with the responsibility of compiling the national bibliography officially referred to as the Kenya National Bibliography. As the KNB is considered the sum total of national bibliographic records which is supposed to be both comprehensive and current, it is interesting to note that the national bibliography has none of these qualities. KNB is still retrospective in its publication. Its most current issue is the 1983 edition which came out in July 1985. The 1984 and 1985 issues which have yet to be published, were expected as early as 1986.(3) Its sister companion, the Kenya Periodicals Directory has only managed on issue, the 1983 - 84 edition. As Nyariki(4) pointed out, the Kenya National Bibliography has in this regard failed totally in its endeavour to serve as a practical selection tool for librarians. Another weakness is that the KNB is not exhaustive in its coverage. Since it relies heavily on the legal deposit law for its coverage, the failure by this law to incorporate materials from Government ministries and departments; and parastatal institutions means that its coverage is to a great extend incomplete.

b) University Libraries

University libraries house a considerable amount of research collections. Most of these collections are to be found in the Africana section where access to the material is controlled. Nairobi University library receives much of this collection by purchase as well as legal deposit. New materials are carried in the library's Accession List which has a separate coverage for Africana materials. The accession list is circulated to leading libraries in the country. In addition to the main library at the main campus, Nairobi University Library has a branch, the Medical Library at Kenyatta Hospital serving the College of Health Sciences. The Medical Library produces the Kenya Medical Abstracts. This work started in 1980 after the East African Medical Bibliography produced by Makerere University ceased publication in 1979. It indexes journal articles, editorials, correspondence,

monographs, monographic chapters, dissertations and theses, government publications, research reports and conference papers. The work which started essentially as an in-house current awareness service has recently established itself as an international document. It is circulated free to medical personnel in Kenya as well as leading libraries in Kenya and abroad including WHO institutions in Geneva, Switzerland and Brazzaville in Congo; and the U.S. National Library of Medicine.(5) In addition to the Medical Library, Nairobi University has other branch libraries offering bibliographic Services. One of these is the library of the Institute of African Studies situated at the National Museums in Nairobi. The Institute conducts research programmes in various aspects of Kenyan anthropology and the majority of its findings are published in the form of seminar papers. Details of these papers are contained in the Institute library's Accession List. Another department rich in research materials is the Institute of Development Studies (IDS). IDS conducts research programmes in economics and related areas. Information on its research publications is contained in its accession list.

Kenyatta University Library in addition to housing the Africana collection and producing the Library's Accession List, publishes a variety of bibliographic works. In addition to the materials published by the academic staff and students in the form of research reports, seminar papers and dissertations, much of the materials contained in their bibliographic works is purchased. Among the subject bibliographies published by the library is Education in Kenya by J.M. Nganga. This is an index carrying articles on education, colleges, schools and universities extracted from newspapers in Kenya. The publication comes out annually and is circulated to leading libraries in Kenya and abroad. Kenya: a subject index by the same author carries information on dissertations written on Kenya or by Kenyans including those written for overseas universities. The index covers the period between 1967 and 1976. Other bibliographies published by the library include the Mau Mau and Christianity in Kenya.

## Special Libraries

Special libraries are perhaps the leading custodians of research materials in Kenya. The majority of these libraries exist to support

research programmes conducted by the parent organization. Much of the collections found in special libraries comprise among others, periodicals, research reports, audio-visual materials, special collections such as maps, manuscripts, clippings and microforms.(6) Among the leading special libraries in Kenya include the library of the Kenya Agricultural Research Institute (KARI) at Muguga. Until 1983, this library operated a technical literature service to libraries in East and Central Africa. The service was based on its rich resources centred on agriculture, biological sciences and related subjects. The current awareness service involved scanning the literature in periodicals and compiling bibliographies for the registered members which comprised essentially of libraries. The bibliography carried articles on East Africa as well as those of general interest to the subscribing libraries. Kibirige(7) considered this service the embryonic creation of a future East African Biological Index. Unfortunately, on account of a number of factors the service had to be terminated in June 1983.(8) There is however a hope that this service will be resurrected in the immediate future to serve libraries in Kenya. So far a survey has already been done and only the decision is awaited from the policy makers.

In addition to KARI library, other special libraries are involved in bibliographic services on a limited scale. Kenya plays host to a number of international research institutions. Many of them house research materials of considerable value. Much of this collection comprises materials produced by the scientific staff. Their recent acquisitions are generally contained in the accession lists circulated in the form of current awareness service to their users. In some institutions such additions are carried in their annual reports. Some research libraries provide information about publications authored by their staff in the annual reports.

Kenya has two leading documentation centres. The Kenya Agricultural Documentation Centre (KADOC) was established in 1977 as a unit in the Ministry of Agriculture in Nairobi. Its main objective is to collect, organize, store and disseminate information contained in unpublished literature emanating from the Ministry of Agriculture and related organizations. To assist in the dissemination of this

information, KADOC publishes the Kenya Agricultural Abstracts (KAA). This document is produced with the assistance of a computer and is circulated free to relevant institutions in Kenya and abroad. The Kenya Scientific Information and Documentation Centre (KENSIDOC) constitutes a department of the National Council for Science and Technology (NCST) charged with the collection, organization, Storage and dissemination of information pertaining to research programmes conducted in Kenya. This service is based on the materials deposited at the NCST. It is a requirement that all researchers from outside Kenya conducting programmes in Kenya have to deposit atleast a copy of their work with the NCST. Since this requirement was passed, a substantial collection of research materials has been built up. This collection is administered by KENSIDOC on behalf of NCST. In an attempt to disseminate information about this collection, KENSIDOC publishes a series of bibliographies, the Scientific Information Service Bulletins which are made available to researchers and accredited libraries in Kenya.

In addition to the national bibliographic services highlighted above, the Library of Congress Office in Nairobi maintains a regional bibliographic service which caters for the Eastern African States. The office publishes the Library of Congress Accession List, a bi-monthly publication with an annual supplement. The publication carries information on both monographs and serials. The Library of Congress' accession list is so far the most comprehensive and up to date general bibliographic source in East and Central Africa. Entries in its bibliographies are arranged alphabetically by country. Other regional bibliographic works include Umbima's Research in Education in East Africa published in 1977 and Houten's Bibliography on health and diseases in East Africa, a retrospective publication which is awaiting publication by the East Africa Publishing House.

## Conclusion

From the foregoing, it appears that only science and technology disciplines have adequate bibliographic services. A lot still needs to be done in areas such as liberal arts. One of the arguments for this bias is that the two areas takeup a greater percentage of researches in Kenya reflecting the rate of development that is taking place in the country in these areas.

**Summary**

This article has been highlighting bibliographic services in research disciplines in Kenya. An account was made of the various agencies responsible for the generation of information in the country. The role of the legal deposit law and its influence on bibliographic activities was examined. Effort has been made to highlight the various information systems in the country housing vast collections of research materials and the bibliographic services they offer. It is concluded that much of the bibliographic services in Kenya are to be seen in science and technology.

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2nd October 1987

NAIROBI

IFLA GENERAL CONFERENCE; CHICAGO 1985

Division: Special Libraries

Section: Administrative Libraries

103-ADM-6-E

# Literature data banks for institutional libraries

## A critical comparison between conventional information media and the possibilities offered by EDP-supported legal information systems in Europe

by

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IR053719

For internal use only S1°
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111
Remarks:
to be presented orally ☐
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The number of laws and law-related technical and economic rules and regulations is growing year by year. The associated literature, commentaries, textbooks, monographs and periodical articles are becoming more and more extensive. The number of final-instance legal judgments, which are constantly required for scientific and practical work, can be recorded bibliographically only with the greatest difficulty, since only a relatively small, often subjective selection is ever printed and thereby publicised.

In the normal fields of law, such as civil, criminal and constitutional law, and even in public law, the collections of legal texts and commentaries are usually well-maintained. They are still manageable for the lawyer and librarian at the national level. The difficulties begin with special areas of law, particularly when regional and local law is involved. Who, as a librarian, can be sure that a legal text in a loose-leaf collection or in a commentary several years old is still valid law? And who but the librarian should be responsible for up-to-date information? Perhaps the commentator has died or the publishers, for commercial reasons, have not brought out a new edition. It is then inevitably necessary to

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read through legal gazettes, even though it is not clear whether the correct legal gazette is being read through. We are all familiar with the user's comment: "I am quite sure there must be something more recent!" It is then very difficult to prove that something does not exist! A librarian at an institutional library, by its very nature lacking the reference books of large university libraries, often cannot help the user in such matters. We all know this vicious circle. An important decision cannot be traced bibliographically because it has been omitted. An escape-goat has to be found; the library is no good! During the next budget negotiations the financial allocation is cut. Perhaps one day it is restricted to personal reference libraries. This would militate against a system of unrestricted dissemination of information aimed at facilitating the user's task and providing him with all necessary information sufficiently quickly for the task to be completed as economically, successfully and authoritatively as possible.

As a result of increasing international collaboration, e.g. in world-wide trade and common defence efforts, access to the laws, regulations and even very specialised texts of other countries is required by users more and more frequently.

This requirement for information can be illustrated by referring to two occasions when I myself had to find the relevent legal provisions. An entrepreneur wanted to know the maximum carbon content in lorry brake pipes permissible under United States statutory regulations. On another occasion a manufacturer of carrier-frequency equipment wanted to know the level of cross-talk attenuation still tolerated on cables in Chile.

One could say of course that all that is not the librarian's task. But who is supposed to obtain such information if the librarian merely shrugs his shoulders?

The need for information is very extensive: every district court, local authority, legal department of a small industrial concern and every lawyer constantly requires such information. However, very often he does without it because he thinks it is difficult, or because it really is difficult, to obtain the information and documents. It is this resignation on the part of many users in the face of the difficulty of using bibliographic aids, often because they do not themselves possess them, which leads to superficial work.

However, the most serious problems arising from insufficient bibliographic search in the field of law occur when laws are amended and regulations issued even though they are in direct contradiction to existing statutes. Such regulations often affect unforeseen aspects of life. Above all, legislators do not make use of the experience of others who have had to cope with the same or similar problems in the past, either out of arrogance, or lack of consideration. The overall state of legal documentation represents a challenge to information science.

A review of the present state of sources in Western Europe shows astonishingly that over 3 000 law gazettes and official journals are published regularly at the regional level of département, Bundesland, etc. In addition around 500 official journals, etc. are published by government ministries.

The National Prussian Heritage Library (Staatsbibliothek Preußischer Kulturbesitz) collects the official publications of around 30 States, but normal periodical lists are seldom included, usually only special sections of national bibliographies containing references to official publications. It is not the purpose of this paper to report on official documents, their form of publication and the bibliographical references to them, but I must point out the difficulties arising even in recording the extensive sources. Classification is relatively simple since either geographic and political boundaries are followed or particular legislative responsibilites are clearly defined. When capturing secondary literature, however, particularly comparative legal works, problems arise immediately.

The problem of analytically capturing legal literature has in no way been solved. However, the user is more dependent on clear and comprehensive information than in other subjects, if he does not want to be at the mercy of lawyers who, as he does not discover until later, are themselves less well-informed than the keen library user.

It may have something to do with the lawyer's approach to his work. Unlike the scientist, he does not refer to all relevant documents, but relies on particular arguments which appear to him to be suitable and convincing, thus simply withholding from the reader contrary opinions and arguments. It is then up to the reader himself to draw up a bibliography and study the literature, if he wants the results of his study to be objective and really scientifically-based. However, as librarians we are committed to scientific working methods, guaranteeing balanced arguments and clear logical reasoning. Despite attempts to create comprehensive running legal documentation with satisfactory analytical capture, including peripheral subjects, it has obviously been unavoidable, as a result of the number of titles, that papers and judgments have to be limited to a selection. Thus only about 15 000 works per annum are bibliographically referenced in the Federal Republic of Germany for all fields of law: works that are also frequently cited in the relevant commentaries to laws. In view of the material, which can only be articulated by means of language, this is extraordinarily little, remembering that nearly half a million people are employed in legal professions in the Federal Republic. The volume of material to be processed is clear from the number of laws and regulations in the same field

About 12 000 federal or regional laws and regulations enter into force or are amended every year. In addition there are about 6 000 administrative regulations and 2.2 million court judgments, half of which represent Supreme Court jurisdiction. About 5 000 monographs are published annually in the field of jurisprudence alone, plus an equal number of dissertations and about 300 new editions of commentaries.

Specialised legal bibliographies are published in nearly all European countries, some retrospectively, others on a running basis, but frequently periodical articles are not cited. Even European Community documentation has only been bibliographically captured since October 1984. The present situation is totally unsatisfactory for the librarian who has to provide his user with bibliographic data. The by now familiar technical and organisational opportunities provided by data processing could radically alter this unsatisfactory situation. Access to laws and regulations and even to legally relevant, technical standard works would be possible even from the smallest institutional libraries. Articles and relevant commentaries could be included in full with the judgment and not, as hitherto, only those arguments deemed suitable by authors

of legal works. Librarians must resist over-specialisation. To simplify usability, it would be preferable to have a system covering all fields of jurisprudence. The structure of such a system could be broken down as follows:

1. Laws, regulations and rules with legal force

2. Collections of decisions and court judgments

3. Legal data files (e.g. patent register, trademark register, penal register etc.)

4. Literature on particular fields of law, legal opinions.

It will not always be possible to use the methods of capturing customary for literature data banks. For certain fields classifications may be necessary to reduce redundancy and guide the user.

Three basic questions have to be asked at the outset of such a project:

1. Who will organise the appropriate data banks without representing in any way economic, political and ideological interests and arrange digitisation of all relevant documents, including peripheral subjects? In the field of law, unlike chemistry for example, this work cannot be given to a private company.

2. Who will carry out the analytical capture according to standard criteria compatible with the systems of other countries, in the event that documents have to be searched internationally?

3. Who will cover the cost of such a project until it becomes self-financing, as I am sure it will one day become?

All countries spend a lot of their tax revenue on acquiring library books and periodicals, but only in exceptional cases do they invest in analytical capture. Only a very small proportion of monographs are included in national bibliographies. It became no longer possible to cope with the volume of documentation using traditional library methods of recording

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material, since cumulative collections cannot be printed out in paper form, yet card catalogues can only be set up in a few places for reasons of cost. As a result comprehensive capture of such information was neglected even when documentation in the field of law was thoroughly desirable.

Unfortunately it has not been objective requirements which have forced users of information in the field of law to act, but the manufacturers of data processing systems wanting to sell their products who have pressed for the introduction of new technology. Programs and equipment have been marketed often without any knowledge of the volume of material involved and the problems of capturing it. It is easy to get approval for funds for projects involving new technology, the final scope of which cannot easily be foreseen. A typical example is the EURODOCDEL data bank intended to record European Community documentation. The documents will be captured not by trained permanent staff, but by temporary staff recruited under job creation schemes. To ensure that the system is well-distributed, searches are to be carried out via videotex according to French BTX standards. Conversion to other countries' systems

is not technically difficult, but cost-intensive. Response times, already very long, are doubled, the number of letters per line is limited and the number of lines itself is small. Concessions have been made to encourage potential users. The project was subsidised at a cost of around $ 9 million, without a preliminary market analysis being carried out to find out the actual number of potential users. Integration into an overall system would have considerably reduced equipment costs and the analytical capture of documents would only need to have been carried out once at source.

The documents themselves were stored on video disk and can be printed out via laser printer. They can also be transmitted by telecopy from Paris, although high telephone charges are incurred (3 minutes per page).

It would have been cheaper to re-organise the entire word processing systems of European institutions, establishing norms for word processing so that documents are already in digitised form. A cheaper form of transmission, e.g. via Datex-P or teleprinter would thereby be possible. The technical facilities for this now extend to every postal network in Europe. The EUROLEX data bank, operated by an affiliate of the International Thompson Organisation, is also accessible via Datex-P and thus throughout Europe. The full text is

stored, the documents being captured by automatic indexing. Thus, for example, the decisions of the Boards of Appeal of the European Patent Office are recorded by EUROLEX. Indeed, court decisions form the bulk of the data collection. Legal regulations are also being increasingly incorporated. EUROLEX is geared towards information centres, such as law and institutional libraries, not so much towards the individual customer. Now a few words about full-text storage. This is an attempt to overcome the difficulties of conscientious analytical capture by using technical methods. The author's expressions and technical language are retained and it is up to the researcher to use the same language during his research. Experience shows that the amount of exploitable information thus obtained, depending on the subject, is considerably less than that provided by a search carried out using well-defined keywords. In addition, the intellectual effort, required only once when documents are analytically captured, has to be repeated every time in the case of a full-text search.

However, for the librarian intent on objective information it is disconcerting to find a private company which publishes daily newspapers, books and magazines and is also active in the oil and tourist business selecting the documents to be searched by a user concerned with scientific accuracy.

There are a large number of data banks like EUROLEX covering specialised fields of knowledge. The demarcation between them is still in a state of flux, as are the cases where the recording of bibliographic data is duplicated. Market forces are followed and studies made on which users have the most money to spend on acquiring a data bank. In the days before data banks a specialist would draw up a bibliography for a particular field, e.g. law, which would then be printed. For a library to acquire it the cost would be $ 100 at most. Researching a data bank generally costs more. Over $ 1 000 are necessary for the terminal alone. Every search costs money. The psychological pressure should not be overlooked. To obtain a password for a data bank it is often necessary to invest considerable amounts of money. What user with a budget often insufficient for acquiring the most important equipment and literature is going to risk expensive searches for which he does not know the exact cost in advance nor how far they may

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extend? And if he cannot say at the end: "There is nothing else, I have researched carefully, I can be quite sure", he may abandon the search altogether and formulate his work according to his own ideas. For that we need no libraries or trained librarians. The same user would no doubt have spent a number of hours looking through bibliographical reference works and would often have come across a good deal of other relevant information. In addition to bibliographical studies, the amount to be gained incidentally, consciously or unconsciously, from reading through titles, even without reading the articles themselves, should not be under-estimated.

The marketing of information has also become more expensive. Whereas in the past only printing costs were incurred, nowadays there are the costs both for digitisation and for continuous availability on electronic storage media. It is no longer worth issuing printed editions to be placed on shelves, since the bibliographic data are sold to a data bank. And it is inherent in the system of data banks that I can no longer know what percentage of published literature I have in fact recorded or whether I have perhaps been searching in peripheral fields using a completely incorrect search strategy; perhaps I have been trying to get my information from a data bank which is very weak in that particular field.

It can be very disappointing to discover how much a host really has to offer, despite a big advertising campaign. I say this in a deliberately provocative way, but business interests based on the profit motive are simply incompatible with serious bibliographical work aiming at scientific comprehensiveness.

The German data bank JURIS, operated as an independent institution, in which all higher-instance German case law including literature since 1977 is stored represents a step in the right direction, leaving aside the GOLEM retrieval system. GOLEM is not compatible with other data bank systems. But large-scale projects also have their problems. JURIS is therefore so far unfortunately only accessible to a very limited circle of users.

To present here existing data banks in their entirety with their weaknesses and advantages would go beyond the scope of this talk. For this purpose there are data bank guides as well as extensive literature which I shall list at the end. The most important data banks, however, are:

LAWTEL
CEDIJ
ITALGIURE

Others: Patent data banks (INPADOC)
Penal register data banks, data banks for technical rules, literature data bank on criminal technology, DATEV-LEXINFORM (a data bank for tax consultants)

But lectures are supposed to stimulate discussions. There is clearly a great need for legal information, but we have not succeeded, as in nearly all fields of documentation and information, in setting up a system which, apart from recording all peripheral fields, offers maximum comprehensiveness, makes international searches possible with a standard search strategy and provides the user with reliable information on whether a law or regulation, issued decades ago, is still in force and clashes with other laws. It would also be useful to know if any legal decisions have been taken recently with respect to that particular regulation or whether courts have ceased to apply a law altogether.

I am aware that little can be done to counter the keen economic interests of producers of data processing systems with a lead in programming or of those trading in bibliographical information. Many of these current projects are already doomed to failure because of their clumsy structure and the consequent small number of users. It would then be time for the IFLA to intervene in the hitherto haphazard trend with clear-cut recommendations, based on specialised librarian knowledge and experience, the failed companies being taken over by independent institutions. It would be desirable for the Administrative Libraries section to find a worthwhile task in this field over the next few years, so that data processing specialists and self-styled documentalists do not simplify the problems by themselves in their "traditional" way.

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IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division: SPESIAL LIBRARIES

Section/RT: Biological and Medical Sciences Libraries

90-BIOL-1-E

# HEALTH LIBRARY COOPERATION IN EUROPE : A FIRST REPORT

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KEYWORD(S):

For internal use only:

Meeting no.: 131

SI: YES/NO

IR053919

40-BICL-1-E
revised

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# HEALTH LIBRARY COOPERATION IN EUROPE : A FIRST REPORT

ABSTRACT

The European Association for Health Information and Libraries (EAHIL), founded at the 1987 IFLA meeting, aims at linking European health librarians and information officers in order to overcome national and linguistic barriers and to act as a channel of communication for information and cooperation.

EAHIL is the result of the First European Conference of Medical Libraries organised in 1986 in Brussels. 300 European colleagues decided there to set up this association. Then months after its foundation, EAHIL membership grew up to 420 members.

EAHIL is now organising the 2nd European Conference of Medical Libraries to be held in November 1988 in Bologna, Italy. 100 papers, 6 continuing education courses and a professional exhibition are proposed to all European librarians, and about 500 of them should participate.

EAHIL publishes a quarterly newsletter since 1987.

Besides conference and publications, continuing eduucation is the main EAHIL activity, especially in the fast moving field of new technologies.
EAHIL is also promoting traineeships abroad and international exchanges of health librarians.

One of the result of EAHIL action is the project promoting bibliographic compact discs in biomedical libraries, a first European union list of biomedical journals and document teleordering throughout Europe.

Those are modest results, but obviously European health librarians understand that cooperation at national level is insufficient , and they successfully set up a European professional body for improving their information, their continuing education and their cooperation.

The growing need of information and the development of new information technologies cause sweeping changes in the field of publishing and libraries, and medical libraries especially.

Informatics is not only a means to accelerate publishing and to improve library services, but also to provide bibliographic data : most of the European health and biomedical libraries are now using on-line bibliographic data bases across national borders, and they start using data bases available on compact discs.

Having to face the steadily faster technological progresses, librarians need to be better informed and to receive better continuing education so as to adapt themselves to the newest technologies.

This is why a few colleagues organised in October 1986 in Brussels the First European Conference of Medical libraries with 6 continuing education courses, 22 exhibitors and 80 papers from leading WHO and CEC figures as well as from experienced or young librarians. 300 health librarians and information officers from 26 European countries participated in this Conference, the ever largest meeting of European librarians, and they decided in the Conference final resolution to set up a European Association for Health Information and Libraries.

Ten months later, on 18 August 1987 at the IFLA Conference in Brighton, U.K., the statutes of this new European Association were signed by librarians of 13 European countries in presence of CEC and WHO representatives.

English and French were accepted as official languages, and the seat of this European Association was settled in Brussels.

74 colleagues immediately joined the new Association and elected its Board and its President.

For its ten first months, EAHIL membership grew up to 420 members :

392 full members from 20 Member States of the Council of Europe
(including 2/3 of individuals, 1/4 of institutions
and 5% of library associations)

21 associate members from the 5 continents,

7 affiliated members supporting EAHIL action.

According to its statutes, the European Association for Health Information and Libraries brings together :

- health librarians and information officers at all levels of the profession,
- national or regional associations of librarians and information officers from the health sector, and
- the health libraries and information centres,

from the 24 Member States of the Council of Europe.

EAHIL accepts under the heading of "associate members" colleagues, associations and libraries from other countries, so as to promote cooperation between health libraries all over Europe and also with health libraries and health library associations on other continents.

EAHIL objectives are :

- to inform European health librarians and information officers, especially in the field of health librarianship,
- to contribute to their continuing education, especially with regard to new technologies, not only by courses, but also by traineeships abroad and exchanges of librarians,
- to improve health information in Europe through high common standards and practical cooperation between health libraries and information centres,
- to represent European health librarians and information officers, especially at W.H.O and at European institutions, and to maintain close links with IFLA and library related organisations in Europe and on other continents, in particular in less developed countries.

Various activities are planned or already implemented to this end.

EAHIL already published 4 issues of its Newsletter since June 1987, with hundreds of news from European and non European countries and announcements of publications, meetings, traineeship opportunities and continuing education courses.

EAHIL also plan to publish a directory of European health libraries and to contribute to the next edition of the world directory of biomedical libraries

EAHIL is now organising the Second European Conference of Medical Libraries to be held in November 1988 in Bologna, Italy, in the context of the ninth centenary of the famous university of Bologna.
100 papers and 6 courses are already listed in its preliminary programme, and this unusual event in Europe should attract up to 30 exhibitors and 500 librarians and documentalists.

One of the main EAHIL activity is of course continuing education.
This is already implemented by EAHIL C.E. courses at its two Conferences, in 1986 in Brussels and in 1988 in Bologna. Other courses could also be organised outside those conference.
EAHIL is also announcing in its newsletter C.E, courses organised anywhere in Europe.
Courses are certainly not the only means to promote continuing education, and EAHIL promotes also traineeships abroad and exchanges of librarians.

In the field of cooperation and new technologies, a side effect of EAHIL action is the pilot project promoting a coordinated use of bibliographic data bases on compact discs by health libraries in Europe, together with the creation of the first European union list of biomedical journals and of document teleordering between health libraries of different European countries.

Those are modest results, compared with achievements of other library associations, but obviously European health librarians understand now that cooperation at national level is insufficient, and they successfully set up a European professional body improving their information, their continuing education, their cooperation and their representation at continental level.

Nothing is definitely established in this very young Association, which has been going on just for one year, and suggestions or collaborations of European and non European colleagues would be very much appreciated.

I would like to use this opportunity to acknowledge with out thanks and appreciatior for the stimulating influence several medical library associations have had on the coming to life of our new European Association, and I want to emphasize especially the very positive attitude of those of United Kingdom and of United States, and also the one of the IFLA biomedical section which steadily supported our initiatives

Sydney, 29 August 1988.

Marc Walckiers,
EAHIL President.

IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division: Special Libraries

Section/RT: Biological and Medical Sciences Libraries

102- BIOL-2-E

# THE DEVELOPMENT OF A MAORI HEALTH KNOWLEDGE BASE

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LR053719

For internal use only:

Meeting no.: 131

SI: YES/NO

PAPER PRESENTED TO THE IFLA/LAA CONFERENCE 1988:

# THE DEVELOPMENT OF A MAORI HEALTH KNOWLEDGE BASE


## Abstract

Although Maori mortality and morbidity rates from infectious diseases have reduced dramatically there is still widespread concern at the low standards of Maori health associated with adoption of a western life-style. A Maori health knowledge base is discussed in the context of developing partnerships in health and awakening and preserving traditional Maori health practices in New Zealand. The Maori health knowledge base has the potential to develop as the primary source of knowledge of Maori health.

Background

At the turn of this century, Maori health was in crisis, the Maori population having dwindled to a mere 40,000. The mortality associated with infectious diseases was appalling, but this was slowly improved by positive health measures advanced by the great Maori leaders of the time, Pomare, Ngata, and Buck. Since that period there have been marked changes in Maori population. There has been a steady increase in its size to 404,778 in the 1986 Census, but more dramatically, has been the drift from rural to urban areas. Whereas previously there were less than 10% of the Maori population in urban areas, today this figure is greater than 70%. The Maori population still continues to increase in marked contrast to the decline in the non-Maori growth rate.

The first definitive statistical publication relating to Maori health was the 1980 report Maori standards of health : a study of the 20 year period 1955-75 (1). This has recently been updated (June 1988) by a further publication Hauora : Maori standards of health : a study of the years 1970-1984 (2). The 1980 report drew attention to the fact that the incidence and mortality from most of the common fatal diseases in New Zealand were markedly higher in the Maori than non-Maori. The report stressed that the current poor health status of Maori people was largely due to the adoption of adverse life-style factors and that these needed to be addressed if significant advancement in health status was to be made. The 1988 report updates the disease statistics but also includes information relating to socioeconomic, self-esteem and cultural factors in seeking to answer the important question as to why the Maori and non-Maori differences exist. There is a strong feeling within Maoridom that socioeconomic, self-esteem and cultural factors are of major importance and that some of these differences are the inevitable result of the difficulties associated with mono-culturalism.

Time does not permit an in-depth analysis of this report save for a presentation of some of the more disturbing statistics:

* Life expectancy at birth is 7 years shorter for Maori males and 8.5 years shorter for Maori females compared to the non-Maori population.

* In 1984, 63% of Maori births were defined as ex-nuptial compared to 19% of non-Maori births.

* Two-thirds of Maori people occupy the two lowest socioeconomic classes, a figure that is over twice that of the non-Maori group.

* At the 1986 Census, 14.9% of the Maori labour force were unemployed compared to 5.8% of the non-Maori labour force.

* 60.1% of the unemployed Maori labour force were under 25 years of age.

* The cot death rate for Maori infants is on average twice that of non-Maori infants and is the main contributor to infant deaths.

* The Maori infant discharge rate for acute respiratory infections is nearly 4 times higher than non-Maori infants.

* First admission rates to psychiatric hospitals have fallen by up to 41% since 1970 except for Maori males where the admission rate has increased by 19%.

* Since 1970 there has been a more than four-fold increase in the rate of first admission of Maori males to psychiatric hospitals for treatment of alcoholism.

* Maori incidence rates for cancer of thee stomach, lung and cervix are more than 2.5 time higher than non-Maori rates.

* The Maori rate for liver cancer has increased by 80% since the period 1974-76. The Maori rate is more than 4 times higher than the non-Maori rate.

* Maori death rates from diabetes, rheumatic and hypertensive heart disease are 4-5 times higher than non-Maori rates.

* Respiratory diseases including asthma, chronic bronchitis and emphysema are excessively high in the Maori population.

Evidence is thus accumulating to sugest that the simulation of a Western life style has taken its toll. While Westernisation may have helped reduce the incidence of infectious diseases, it has not provided a congruent set of values or a culturally relevant framework within which a

state of total health might be realised. Alienation from the parent Maori culture is sufficiently prevalent in children with learning and behavioural problems, with adolescents remanded to custodial institutions, and with adults referred to psychiatric hospitals, to warrant caution in the abandonment of traditional cultural values.

To some extent the problem has been in the definition of health. In March 1984 the Department of Health hosted a seminar on Maori health. It emphasised the import of a Maori health perspective. In traditional Maori terms health is an all-embracing concept which emphasises the importance of the Wairua (spiritual), Whanau (family), Hinengaro (mental) and Tinana (physical aspects) (3). Modern terminology refers to this concept as "holistic", a term regarded by Maoridom as somewhat condescending, which contrasts with the traditional western model in which the physical aspects of health and sickness are emphasised. From the Maori perspective issues involving Te Whenua (land), Te Reo (language), Te Ao Turo (environment) and Whanaungatanga (extended family), are central to the Maori culture, central to health and deeply rooted in the principles of the Treaty of Waitangi, 1840.

For Maoridom the Treaty expresses their status as Tangata Whenua (indigenous people); guarantees their rights with respect to land, water, forests, fisheries, and other taonga (treasures); and confirms their rights to Mana Motuhake (self-determination). The signing of the Treaty by both Maori and Pakeha (whites) was seen as the recognition of a partnership of equals and the basis for relationships between the two races. Implicit within the Treaty were the concepts of equity, partnership, and economic and cultural security, all of which contributed importantly to Hauora (spirit of life/health). Poor standards of Maori health may therefore be regarded in part as non-fulfillment of these Treaty concepts and obligations.

The Treaty of Waitangi is very much to the forefront of current Maori thinking and Government has already indicated a commitment towards it. In June 1986, Cabinet agreed:(4)

1. That all future legislation referred to Cabinet at the policy approval stage should draw attention to any implications for recognition of the principles of the Treaty of Waitangi.
2. That departments should consult with appropriate Maori people on all significant matters affecting the application of the Treaty.

3. The financial and resource implications of recognising the Treaty could be considerable and should be assessed wherever possible in future reports.

The New Zealand Department of Health accepts that concepts of health are firmly based in Maori culture (which, according to the Treaty, has a right to official recognition and protection) and that Maori people have a right to appropriate services - funded through our health system (5). This view is in accord with the WHO principles set out in the Alma-Ata Declaration of 1978 on Primary Health Care, and further expanded by the Ottawa Charter on Health Promotion in 1986.

Health authorities are being urged to re-examine basic attitudes to health and health care along cultural and ethnic lines. Tribal authorities have been advocated as custodians of Maori health, and more emphasis on culture as a component of health has been recommended for the curricula of training health professionals (6). The Department of Health has made a commitment to the development of a bicultural health system and workforce and has emphasised the Treaty of Waitangi as the basis of partnership in health between Maori people and others in New Zealand. There have been strong calls too for more effective involvement of Maori people in health planning, a critical factor if the health needs of many Maori people are to be adequately met. Basic to this aim is the recognition that health cannot be imposed on a community but must develop in an acceptable manner from within in response to problems perceived at a local level.

A Knowledge Base

It is in response to these issues and considerations, and indeed, moving congruently with them, that the embryonic developments of a potential Maori health information system commenced. The idea was first mooted by a Maori physician, Dr Henare Broughton, in 1985, and at this stage was to be no more that the compilation of a Maori health bibliography listing existing published material. Very little developed until early 1987 when it was determined that this work, if undertaken, should be conducted by a Maori, but it was perceived that there were very few who were trained bibliographers. The project in this form was therefore shelved.

At about this time consideration was given to the question of Tohungaism. In ancient times the tohunga had been a

respectable and highly respected member of Maori society. He was deeply learned in priestly lore, and had some knowledge of herbal remedies and healing processes (7). In New Zealand the Tohunga Suppression Act was passed in 1907, not to be repealed until 1962, although the Maori community were not to learn of this until some five years had passed. This particularly vicious piece of legislation almost succeeded in exterminating the traditional art of Maori healing practices. Some survived by going underground in rural enclaves, and knowledge was passed down through their families. Today there are only some six tohunga practising their art. Maori people have indicated strongly that Maori issues, such as traditional healing practices, can only be successfully studied by Maori people themselves. The views of tohunga needed to be sought and listened to, along with, but not instead of, the Maori and Pakeha people who have trained to become Western health professionals. We were thus moving to seek information about Maori health from the Maori viewpoint, for the Maori people. Much of the impetus and philosophy for development was the work of Hugh Evans (Assistant Secretary, Policy & Communications, Department of Health).

By November 1987 it was clear that we were moving away from traditional bibliographic areas and the concept of a knowledge base was first mooted in the context of providing the necessary flexibility for data entry, manipulation, storage and retrieval. Our definition of a knowledge base does not include the concepts of artificial intelligence nor expert systems. It is based on the "researcher's notebook" approach as advanced by the Baylor College of Medicine in its IAIMS project (8). The concept of the role and use of a research notebook as an information repository is widely accepted by researchers. The notebook is adaptable to many types of research and does not constrain the types of data collected or its organisation. Data may be organised in different ways by different organisers of the notebook. We endeavour to recreate, store, organise and retrieve traditional knowledge which does not exist at any one site nor with any one individual. The knowledge base will thus become the primary source of information in this area.

To achieve this goal we will utilise the full-text retrieval facility that exists on BRS, together with facilities to produce templates and print-time formats. There will be five categories within the "researcher's notebook":

1. Conventional bibliographic references with abstracts and summaries. The summary will comment on the value of the item from a Maori perspective.

2. Commentary. This will include the researcher's own views, opinions or interpretation.

3. Full Text. This will include discussions with traditional healers and tribal elders, and the text of significant documents.

4. Directory of Experts. Much information has been and is being passed on orally. The directory will list outstanding people providing names and addresses, together with an abstract of the sphere of Maori health in which they specialise.

5. Tribal Resources. This will list the location of such items as taonga (treasures) appropriate to Maori health, and such items as video tapes or sound recordings which may not be available outside of the particular tribal environs.

Each category will have its own template and specific formats for searching. The key to researching the "researcher's notebook" will be the subject headings which will be Maori and MeSH. Initially much of the text will be in Maori and the question of future translation into English remains in doubt as so much could not be translated in an appropriate manner and would have little meaning if so done. The Maori subject headings (SM) will interface with the BRS thesaurus. It will therefore be possible to determine, for instance, the commonest concept for "health" after significant text has been entered on the knowledge base. A word count could be conducted on the words or phrases retrieved to determine common concepts.

The knowledge base is intended for online enquiry and will be available through the Health Sciences Network (NZ Department of Health). The Department of Health has appointed Sam Rolleston as the principal Maori researcher. It is hoped to acquire the work of Murdoch Riley who has spent some ten years researching Maori herbal remedies, health and culture. This material is all unpublished. The project is jointly sponsored and funded by the Department of Health and the National Library of New Zealand.

Data Collection

The principal researcher has devoted some two months in exploring and utilising the resources of the libraries in

Auckland, examining for example the George Grey manuscripts, and the Department of Health Library. However, the more significant portion of the research has been devoted to consultation and meetings with his own tribal group. From this has emerged a series of notes and videotapes. Approximately six experts in traditional Maori healing practices have been identified. The whole spiritual and cultural concepts of Maori health are being explored. A flavour is emerging of things which no book could ever hope to tell. For example a discussion on the use of an individual curative plant inevitably leads into the whole field of Maori mythology. Mythology is very precious to the Maori. It is not a fairy tale and is used with anecdotes, humour and total life philosophies.

Problems

The major problem in gathering information in this field stems from the mistrust, scepticism and scorn which Maoridom has for the establishment. Tohunga in particular are reluctant to come forward and be publicly identified, even amongst their own people. It may take half a century to identify them.

Much of the information is in the oral tradition and this is difficult to transfer directly onto a database system. Some knowledge is Iwi (tribal) specific and for various reasons will remain within the Iwi. There is a feeling that so much is sacred that it would be inappropriate to house this knowledge in a manner which has overtones of commercialism and modern day technology.

Because of particular tribal considerations, it is necessary that the researcher establish his Mana (standing) with his own tribe first, before seeking to move into other areas. It may become necessary to appoint researchers from a number of tribes.

Conclusion

The project is significant in that it is a genuine attempt to determine the Maori viewpoint on health and to develop resources for the Maori people in this area. Maori people outside of the health area are widely excited, and it has provided a stimulus for awakening amongst Maoridom itself; an awakening which may be as significant as Te Maori itself. Te Maori was the catalyst for the current cultural Maori renaissance.

It is perceived that the Department of Health has provided the researcher with an unprecedented amount of freedom and lattitude; there are no expectations or rules to observe. Only information approved by Maori people will be added to the knowledge base. It is felt that the Department of Health has shown a genuine, humanistic interest, operated in the true spirit of partnership, and it is hoped that this may provide a blueprint for future activities by other government departments. The Department of Health has admitted that there are certain things it can not do. There are things that the Maori people must do themselves.

From the viewpoint of a librarian it is rewarding to be involved in a project which gathers knowledge almost lost to us; and to be part of an empowering process that restores self-esteem and pride to a most worthy people.

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ACKNOWLEDGEMENTS


I wish to thank Sam Rolleston (Maori Research Officer), Chris Campbell (Assistant Manager, Information Services), and Geoff Kelly (System Administrator), of the Department of Health, for their support in the preparation of this paper.

IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division:

Section/RT:

1988

CONTRIBUTED PAPER SESSION

025-Cont-3-E

# Access to Agricultural Information By the Rural Women in Uganda: Present Structure, Problems and Hopes for the Future

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KEYWORD(S):

For internal use only:

Meeting no.: 89

SI: YES/NO

IR053719

## A B S T R A C T.

Women in Uganda constitute about 53% of the population. Over 90% of the Uganda population live in rural and marginal sub-urban areas. It is important therefore that programmes which are intended to benefit the majority of women in Uganda should focus their attention on the rural and marginal sub-urban areas where 91.3% of Ugandan women live.

Ugandan women are responsible for 60% of the food production and between 60-80% of the agricultural labourforce. They are involved in the growing, processing, preservation, storage and marketing of the agricultural produces, all this done predominently with treditional methods, materials and equipment. Because of their low levels of formal education, high illeteracy rates, traditional roles of wife and mother, their access to the formal channels of information in general and agricultural information from the extension workers, radio, television and Community Development Clubs in particular is minimal. Informal channels like women's religions groups church and market days as well as agricultural shows may be more effective since those always reach down the village level in more acceptable and informal manner given the social constraints of the women in general and rural women in particular.

It would be impossible to discuss the access to agricultural information services by the rural women without a brief outline of the importance agriculture plays in Uganda's economy and the position of women in the traditional and cultural organization in the Ugandan society and the part they play in agricultural production.

Agriculture in Uganda's Economy.

As in several other Developing Countries, Uganda depends on its agricultural produce both for subsistance and export. Coffee and Cotton are its major export crops while tea, tobacco and sugar cane are important for the East African and internal markets. Agriculture is by far the most important activity in the country upon which 85% of the population depend. A further 10% of the population earn their living from agro-oriented industries. It is estimated that 80% of the country's foreign exchange is derived from the agricultural sector, mainly coffee and more than 30% of the tax revenue raised directly from export taxes on coffee and cotton and excise duties on tea, tobacco and sugar. Currently, because of the present government's emphesis on barter trade, the production of maize, beans, soya beans and groundnuts has been given great emphasis through the Recovery and Rehabilitation Agricultural Programme which is trying to reverse the economic decline of the 1970's and transform rural production activities from being merely a way of life to being business oriented.

The Position of Women in Society and their Role in Agriculture.

Women in Uganda constitute about 53% of the population. Over 90% of the Uganda population live in rural and marginal sub-urban areas.

it is important therefore that programmes which are intended to benefit the majority of women in Uganda should focus their attention on the rural and marginal sub-urban areas where 91.3% of Uganda women live.

It has been stated over and over again that the role of women in our African Society is "to reproduce, cultivate, and produce fuel and water."

On account of this myth, Uganda women, like their counter parts elsewhere in the Developing Countries, are involved in small scale agricultural and agro-oriented activities for both subsistance and business levels. Thus in the rural areas, Uganda women contribute over 60% to the food production and 60-80% of the agricultural labourforce, while men either migrate to urban areas for formal employment or hire out their labour in other fields.[2] Women are involved in the growing processing, preservation, storage and marketing of agricultural produce, all this done predominantly with traditional materials and equipment. Furthermore women have the biological and social tasks of bearing, nurturing and providing traditional education for children and in ensuring the well being of their families. They fetch water and firewood for domestic purpose, they tend and milk the cattle, and it is they who carry the produce of farm usually many miles to sell at the markets. The following data on women's work in Africa gives a better summary of the rural women's burden:-[3]

| | Women | Men |
|---|---|---|
| Growing food | 70 | 30 |
| Storing food | 50 | 50 |
| Grinding, Processing food | 100 | 00 |
| Caring for animals | 50 | 50 |
| Selling, exchanging produce | 60 | 40 |
| Fetching water | 90 | 10 |
| Fetching Firewood | 60 | 40 |
| Child Care | 100 | 00 |
| Cooking | 100 | 00 |
| Cleaning | 100 | 00 |
| House building | 30 | 70 |
| House repair | 50 | 50 |
| Community Projects | 70 | 30 |

In addition to the above data literacy rate is higher for men 71% them for females 36% and the level of formal education is generally lower for females than males which has minimized their productivity, self fulfillment and eventual social, economic and political development. However, as we shall see later, the United Nations Womens International Year (1975) and its Women's Decade and World Plan of Action, 1975-1985 have been concrete expressions of the great effort developed by the U.N. for calling the attention of all countries and governments for the need to definetely eliminate the forms of discrimination which oppress women and of adopting measures to assure that the capacities of millions of women will be utilized in a more fruitful way on behalf of national development.

Agricultural Information Channels.

Research in information and mass communications in developed and developing countries has shown that information resources are a direct index of the total level of economic development. Information resources could therefore be looked upon as a commodity that can be consumed like any agricultural commodity. This commodity, information, is however, a scarce factor in Uganda. We thus have to plan, allocate and utilize this factor more carefully them our counterparts in "information - saturated" regions of the world. One way is to carry out continuous research to evaluate our agricultural information programmes to determine their effectiveness. Then, from these findings we can decide which mediums or communications-mix are most effective. So far in Uganda, it has been found through basic survey, that farmers in Uganda receive agricultural information mainly through these media.[5]

1. Extension staff.
2. Relatives, friends and neighbours.
3. Radio
4. News papers.
5. Non-government organisations.
6. Chiefs.
7. Mobile cinemas/TV.

This, according to the survey refered to, is the order according to which farmers in Uganda receive agricultural information. But, it could be a guide only.

Formal Channels of Agricultural Information.

The government is committed to the dissemination of agricultural and agro-based information and services to the rural areas in order to raise their level of technical and scientific understanding. The Ministry of Agriculture, The Ministry of Marketing and Co-operatives, The Ministry of Local Government and some parastatal bodies like Coffee, Lint and Produce Marketing Boards employ extension workers throughout the 10 districts in Uganda. The extension workers with Regional Headquarters in each of the 4 Regional divisions, operate from the regional to the district levels from where they are supposed to extend to the parishes, Villages and individual farmers to teach them better farming techniques as to transform rural substance agriculture to commercial farming. Again in each of the 10 districts there is a District Agricultural Farm Institute which:-

a) Offers short residential and one day courses to practicing farmers, their wives and children in various aspects of improved farming.

b) Stimulate adults and youth to change their attitudes towards recommended crop and animal husbandry practices, better their family living, and modern and economic agricultural methods.

c) Extend agricultural knowledge through the out-reach programmes to the neighbouring homes.

d) Serve as a centre for various agricultural activities; fertilizers and variety trials and demonstrations, multiplications and bulking of seeds for recommended varieties of crops and livestock.

In addition to the above structure, during the United Nations Decade for women, 1975-1985, efforts were made to try and uplift the situation of the rural women by various Ministries[6]. The Ministry of Agriculture through its Home Economics Programme established clubs for women which provide courses of instruction and demonstrations in nutrition, food storage, food conservation and other topics related to the women's traditional housewifery. In 1983, The Ministry of COoperatives and Marketing set up a women's section in the department of Co-operative Development. Its purpose is to help women join and fully utilize the Cooperative Societies for their social and economic development with this assistance, and pulling their labour, rural women have been able to build small business and marketing agencies in close proximity to their home areas. Todate there are 83 women's cooperatives groups which include the following categories: savings and credit, agricultural marketing, handicrafts, grinding mills, collective (groups) farming, consumer and multipurpose. The Ministry of Culture likewise has over 2,000 Community Development Clubs all over the Country. These clubs organise training courses throughout the country for village women club leaders. The subject covered include childcare, domestic skills, nutrition, health education, literacy and cooperative activities. On the financing of agricultural projects, the Uganda Commercial Bank has established a Rural Farmers Credit Scheme to enable rural farmers in general and rural women farmers in particular to obtain agriculture credit mainly in the farm of inputs without the securities, normally required banking institutions. The bank has been very busy in the rural areas publishing this scheme to farmers.

Although the Government is commited to the dissemination of agricultural information and serve to the rural population, whatever contact the rural sector has with government agricultural and agro-based extension workers or with representatives of the various parastatal bodies, this contact is often limited to men because of the following constraints:-

a) Women are tradinally dependent on men, not only economically but also for information and decision making. Participation in courses organised by District Farm Institutes; Programmes of the Home Economics Clubs or Community Development Clubs where women are likely to come out informed and be in a position to make decisions on the farm, home etc. challeages the traditional hierachy within the home and fears of altering family relation slips makes many husbands and fathers reluctant to allow their wives and daughters participate in such informative programmes. Women simply receive instructions from their husbands , fathers or other male head of the family and carry them out. Thus most women remain isolated from their governments extension programmes. In most cases, it is the men as a whole that receive the security free credit facilities, seeds fertilizers and the information both before and after obtaining these agriculture inputs.

In a survey done in 1978 on the problems facing women clubs in one of the Districts in Western Uganda[7] the sample question trying to elict the husbands' attitudes towards women's clubs provide some important findings. Of the 70 people under survey, 57 were married women with their husbands, 6 were widows, 4 were unmarried mothers and 3 were spinisters. In some way or another, all the 57 marrieds said that their husbands were against their joining these clubs though they allowed them to continue participating. The reason they gave are varied.

The main reason the women gave is that their husbands suspect them of indulging in love affairs with other men while away to attend club-functions. Husbands always believe that if a woman does not stay where other members of her family, could watch on her, she could be approached by other men for love affairs. In Uganda few men can fully trust their wives. As the husbands are masters of the home they are reluctant to grant permission to their wives to join such clubs. The second reason given was that men are of the view that through club-participation, women learn to become authoritative and decision makers of the family and they fear that this will make women get away from their inferior role prescribed to them by society. Connected with this, the husbands accuse women of gossiping in clubs which leads to family qurrels. Finally husbands felt that they have the traditional obligation to support wife and family and saw no reason for their wives to participate fully in these clubs as they did not consider it necessary for them to acquire information or any skills for any job.

b) The burdens of wife and mother - "producing, reproducing, fetching water and fuel" leave most women with no time to participate in most agricultural extension network outlined. It is estimated that women in African work approximately 17 hours a day out of a total of 24 hours which leaves them very little time for rest and leisure to take advantage of these government programmes.

c) Differences in educational levels to a certain extent inhibit women's participation in obtaining extension information and services.

Radio, Television and Newspapers.

Another channel of agricultural information to the rural areas is radio. The role played by the television and newspapers in the dissemination of agricultural information in Uganda is minimal because televisions even in the urban areas are very few and almost non existent in the rural areas, with regard to the newspapers, although there are a few in the vernacular, they are still relatively expensive for the average rural farmer to be bought on a daily basis. Transport also makes it impossible for the newspapers to circulate outside the urban areas. However, the Department of Agriculture employs, besides the extension workers, the radio to reach and teach farmers better farming techniques. A study of the impact of radio as an extension method and farmers' behaviour towards "Calling Farmers" programme as well as the influence of age, sex, education and wealth on the impact of "Calling Farmers" Programme taken in 1983 came out with the following satistics on distribution of listening time to "Calling Farmers" Programme.

| Time/Day | Sunrise | Morning | Noon | Afternoon | Evening | Night |
|---|---|---|---|---|---|---|
| | 6 - 9 | 9 - 12 | 12-3 | 3 - 6 | 6 - 9 | 9 - 12 |
| Monday | 54 | 4 | 78 | 18 | 168 | 96 |
| Tuesday | 47 | 4 | 86 | 32 | 164 | 85 |
| Wednesday | 46 | 4 | 80 | 23 | 162 | 78 |
| Thursday | 52 | 6 | 90 | 29 | 160 | 83 |
| Friday | 48 | 8 | 87 | 29 | 168 | 99 |
| Saturday | 52 | 14 | 112 | 62 | 223 | 136 |
| Sunday | 51 | 12 | 111 | 51 | 203 | 132 |
| Average Mon - Friday | 49 | 5 | 84 | 26 | 164 | 88 |
| Average Saturday - Sunday | 52 | 13 | 112 | 57 | 213 | 134 |

Time was categorised into sunrise morning, noon, afternoon, evening and night as indicators of time because most farmers in rural areas have no watches. They use the sun as an indicator of time. The table above clearly indicated that the peak listening time was between 6.00 and 9.00 p.m. daily and the number increases even higher on Saturdays and Sundays. Currently "Calling Farmers" Programme on the radio comes weekly between 9 a.m. - 10 a.m. while "Women Programme" on the radio comes at the same time weekly.

Another factor established by the same research was that about 56% of active radio listeners to "Calling Farmers" Programmes are men, whereas women represent only about 31%. This factor is important in Uganda's setting because men as already decried elsewhere, are generally decision makers. For sure, the Uganda woman on the farm does, in most cases, more work than the man, and yet her access to this vital input is very limited. The reasons to the limited listening 'Calling Farmers' Programme by women is mainly due to some of the constraints earlier pointed out. The programme comes at a time when women in the rural areas are either preparing supper or cleaning children for bed. Some are already too tired after 17 hours toil in the garden, fields and kitchen to be bothered. The same findings could be satisfactorily applied to the listening to the "Women Programmes" which come either in the early part of the morning when women are very busy in gardens and fields or late in the evening when they are still busy winding up the day's domestic chores.

Informal Information Channels.

Indegeneous and International Non-government Organisations are involved in various agricultural projects specifically aimed at uplifting the economic status of the women and they therefore are an informal channel of both general and agricultural information. The UNICEF's Intergrated Programme which focuses upon improved environmental health, improved nutrition; the UNDP's Small-scale Equipment Project under which agricultural implements, equipment and tools suitable for small scale farmers are manufactured and repairs services offered. The World Food Programme WFP, UNDP and FAO's assistance to the Dairy Corperation Rural Milk Collecting Centre. The EEC's Poultry Programme in the rural areas which has provided parent stock, fertilized eggs for hatching and delivery vehicles. The approach to these programmes is community based and identifies specific target groups such as children and women. Most of the information on these Projects and programmes in disseminated by these organisation mostly through the project/programe field officers and through the radio. Some of these project are discussed during the "Calling Farmers" Programme or the "Women Programme" on the radio. Likewise, since some of these international agencies work with indegenous women's groups, like the Community Development Clubs, Y.W.C.A., Mothers' Union etc., the information is disseminated through these women's groups. Once again we are back in the none circle, women's clubs and radio and the limitations of these medias as channels of agricultural information to the rural women has already been discussed.

The indegenous non-government organisations with a bias to rural development are predominatly women's organisations namely the Young Women's Christian Association YWCA, the Mothers Union, Catholic Women's Guild, Uganda and Muslim Women's Association. Apart from the variety of their programmes, which include literacy classes, agriculture and nutrition, handcrafts and other small scale income generating projects, their main objective is to uphold the religious morals in society in general and the institution of marriage in particular. Apart from the Y.W.C.A., these women's religious organisations operate under the umbrella of their churches/Muslim Supreme Council and they therefore form part of the accepted organisational hierachy within our society. Since churches/ mosques are to be found at the lowest level of rural organisation, the village, there is always a Mothers' Union, Catholic Women's Guild and a Muslim Women's group at every Church/Mosque in the village. The parish or village preachers usually announce the meetings of these groups or inform those attending the services what these groups have done or are doing in the area.

In a society like Uganda where as we have seen, information is a scarce commodity and men in general are hostile to women's clubs in general, more emphasis should be laid on the use of these women's religious groups mainly because:-

a) They are spread throughout the country even at the lowest level of our social organisation, on a voluntary basis.

b) Apart from the mosques, it has been established from a district sample that women in Uganda (and possibly elsewhere in Africa) form more than 50% of the Sunday Church goers in the Catholic and Church of Uganda (Protestant) Churches.[10] Church services therefore provide a voluntary women group assured every Sunday - hence information could be disseminated by particular Mother's Union/Catholic Women's Guild members through the preachers.

c) Women religious groups, unlike the Community Development Clubs and the extension workers, (who are usually men) are welcomed by husbands simply because they believe they specifically aimed at upholding the institution of marriage. The institution of marriage in Uganda and most likely other developing countries, is the care of the women's inferior social economic and political status and it is not surprising that organisations, that are aimed at upholding it intact without changes indirectly encourage the continuation of women's inferior place in society. This is why men are not hostile to their wives becoming members of these groups and there is clear evidence that men have in many cases persuaded their wives to join them.[11] Information passed through this channel, therefore has a chance to be effectively disseminated.

Market Days and Agricultural Shows

Another source of informal agricultural information source in rural areas are the monthly Market Days and occasional agricultural shows. These give an opportunity to a house hold either to market their farm produce or to go and buy commodities they do not have from other households in the neighbouring village or parish. Most men will not object to

their women and daughters going to market or agricultural shows because the husbands will very often than not use them to carry his produce to the market for sale and carry back what he has bought. Hence for most women, a market day is in a sense, not only a business trip but an outing to meet friends and relatives from next village or parish. Such meetings also gives them an opportunity to hear from their fellow women and some times men of the latest developments in the planting, processing of the produce, information regarding fertilizers, sell of agricultural inputs e.g. seed, wheelburrows seeds is also usually obtained this way.

In conclusion therefore, I would say that the existing channels of agricultural information to the rural women are not well equipped to reach its target. As we have seen, the constraints emanate from the inability of the existing structure to reach the rural woman in an accepted manner. The radio programmes on agriculture as we have seen operate during hours when most women in the rural areas are still busy. But, the hardest hurdles if all is the trational place accorded to our women in society in general and to the rural women in particular. While women in their various organisations are fighting for equal opportunities at home, work politics, for the time being our government, since it is committed to uplifting the conditions of the rural masses and women form over 90% of these, it should take remedies to rectify this lack of information espicacilly as it pertains to a very senstive sector in our economy, agriculture. I would like to end by suggesting the following:-

a) Since most men are hostile to women's clubs generally and welcome these with a religious bias, steps should be taken by the government to co-operate with them in the dissemination of agricultural information. For instance instead of training extension workers from the related Ministries at the District Farm Institutes, women leaders of the various religious women's organisations could be incorporated as a policy so that they can go back to the parishes and village churches and pass on their groups the agricultural techniques and information acquired.

b) The Ministry of Agriculture should liase with the Ministry of Information to work out a more satisifactory ~~training~~ timing of the women's programmes and the one on farming to ensure that the rural women who have access to radio sets have time to listen to such programmes.

c) Extension workers from the districts and staff at the District Farm Institutes should endevour to participate in market days and offer agricultural information and if possible services.

d) The government through the recently established Women's Development Office which now has a woman deputy minister, should set up a women's Information Bureau charged specifically with the task of ensuring that relevant information is timely disseminated to women in general and to the rural women in particular.

**Foot-Notes:**

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IFLA GENERAL CONFERENCE, SYDNEY, 1988

Division:

Section/RT:

CONTRIBUTED PAPER SESSION

26-Contr-4-E

# Online Information Services and the Information Needs of the School Community

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KEYWORD(S):

For internal use only:

Meeting no.: 89

SI: YES/NO

TR053719

## ABSTRACT

L.A. Clyde (Australia). Online Information Services and the Information Needs of the School Community.

Recent documents and reports from the United States of America, the United Kingdom, and Australia indicate that online information services have a place in schools, both as a source of up-to-date information for pupils, teachers, and school administrators, and as a means of teaching the skills of information access and information use. Current curriculum theory draws heavily on ideas about resource-based learning, individualisation of instruction, and the need for all people to develop lifelong learning strategies to cope with a rapidly-changing world. In relation to this, online information services have the potential to extend the range and variety of information resources available to teachers and pupils in schools, and to provide a valuable resource for information skills development. Types of online information services which could be used include cataloguing services, bibliographic services, full-text and statistical information services, videotex services, local and special-purpose services, and electronic bulletin boards. However, some current research also indicates that, in reality, the potential is still to be fully realised. The results of a small-scale research study conducted in Australia by the author in 1987/1988 will be cited in this context.

# ONLINE INFORMATION SERVICES

# AND THE INFORMATION NEEDS OF THE SCHOOL COMMUNITY

Laurel A. Clyde

## 1. INTRODUCTION

Recent documents and reports from Australia and overseas indicate that online information services have a place in schools, both as a source of up-to-date information for students, teachers, and school administrators, and as a means of teaching skills of information access and informaion use. Current curriculum theory draws heavily on ideas about resource-based learning, individualisation of instruction, and the need for all people to develop lifelong learning strategies to cope with a rapidly-changing world. Online information services have the potential to extend the range and variety of information resources available to teachers and students in schools, and to provide a valuable resource for information skills development.

However, some current research also indicates that, in reality, the potential is still to be fully realised. In particular, it would seem that much of the work with online information services in schools is being done by Computer Studies or other subject teachers, rather than through the school library; that emphasis is being placed more on physical access to information than on the information skills of students; and, even in schools where online information services are used regularly, many teachers remain uncertain of their value or their use.

## 2. INFORMATION NEEDS OF THE SCHOOL COMMUNITY

All members of the school community have information needs, many of which can and should be met through the school library, using a wide range of resources. Students need information related to their school subjects; their hobbies and special interests; the school clubs to which they belong; their sporting, cultural, and recreational activities; vocational preparation; personal development. Teachers need information related to new developments in education and teaching generally and to their particular teaching areas and academic interests. School administrators need information on significant developments elsewhere; information for planning initiatives in courses, buildings, or other special programmes; important documents and research reports which may assist with planning; information on new techniques and tools (for instance, new computer packages for administration); and information on programmes and projects that have been trialled in other schools. Parent groups and school councils need information that will help them to make appropriate decisions in relation to the school. Comparatively little research has been done in the area of information needs in schools, though there is some on the way in which teachers locate and use information. However, a major project is currently under way in Australia (1988), funded by the Australian Schools Commission. This LINOS (Learning and Information Needs of Schools) Project will be completed, and a report will be available, later in the year.

## 3. ONLINE INFORMATION SERVICES

Online information services are currently available in a range of forms; many of these are appropriate for use to help to meet the information needs of schools. Overseas and Australian examples of the various types of services are given below; it needs to be stressed, however, that this is a very brief listing and that the online directories should be consulted for more complete lists. The current edition of the Cuadra Associates' Directory of Online Databases, for instance (1), lists almost four thousand online services around the world, while national database directories (such as that produced by the Australian Database Development Association) (2) and directories of electronic bulletin board systems, list thousands more.

### 3.1 Cataloguing Services

While the original subscribers to online cataloguing services like OCLC, BLAISE, and ABN (Australian Bibliographic Network) were larger libraries, some school libraries and school library authorities began to take advantage of online cataloguing services in the 1970s. In Australia, ASCIS (the Australian Schools Catalogue Information Service) was established in 1983 to provide computer-based cataloguing information for the nation's approximately 10,000 schools. It is now the largest such service in the world. Teacher librarians can search the database on microfiche, or dial up and search online. In response to schools and other educationists, ASCIS has recently extended its database to include, not just cataloguing records, but also review information and a curriculum information service for teachers (ACIN).

### 3.2 Bibliographic Services

Large information utilities like DIALOG and Pergamon Infoline/ORBIT in the United States, DATA-STAR in England, and AUSINET and AUSTRALIS in Australia, make available a range of bibliographic databases containing references to books, periodical articles, reports, and sometimes theses, audiovisual materials, reviews, and other documents. Abstracts or summaries are usually provided as well. Several of the bibliographic databases are aimed specifically at educators, providing curriculum information, information for school decision-making, and sometimes material for use in the classroom. Examples of such databases include ERIC (Educational Resources Information Center), available on DIALOG, ORBIT, and CTC (in Australia); Australian Education Index (available on AUSINET); and the ACIN (Australian Curriculum Information Network) database on ASCIS in Australia. Subject databases can provide information for teachers in syllabus planning and lesson preparation; some will also be suitable for online searching by students. Databases which could have applicability are many; they include Energyline (on ORBIT and DIALOG), Enviroline (on ORBIT and DIALOG), Historical Abstracts (on DIALOG), Sport and Recreation Index (on ORBIT), Family (the Australian family studies database on AUSINET), and Streamline (an Australian water resources information service on AUSTRALIS).

### 3.3 Full-text and Statistical Information Services

In contrast to the bibliographic services, these information services make available the text of documents, reports, articles, books, as well as statistical information of various kinds. These services can

be used to gain access to information which is more up-to-date than that available in published sources, to locate information more quickly than would be possible with a manual search of available sources, and to extend the information environment of teachers and students in the school. At the same time, like other services, they can be used to teach online search strategies. Databases which could be used in schools include the online versions of Facts on File, the Academic American Encyclopedia, and Everyman's Encyclopedia on DIALOG. Other major American services offering full-text and other information include The Source and CompuServe. The Australian utility, AUSINET, has the Australian Bureau of Statistics' database, Software Locator (the full text of computer software descriptions from leading Australian journals), and the World Reporter current information service. The Australian schools service, CTC, has The Australian Encyclopaedia and The Macquarie Dictionary, among other reference works, online.

### 3.4 Videotex Services

Because information is stored and accessed differently on videotex services, and because the skills needed to use them are different from those needed for other online services, they are listed separately. Prestel, British Telecom's public videotex service, which was one of the first in the field, has led the way in educational applications as well. It offers special databases for users involved in education, including some up-to-date education services which are not available in any other way. In addition, schools have access to the Prestel services such as news, weather, games, government information services, information about computer hardware and software, statistics, financial information, teleshopping, electronic mail, and telesoftware. In Australia, videotex services available to schools include Viatel (Telecom Australia's public videotex service) and Elderlink, a service which carries agricultural information in addition to news, general information, and teleshopping.

### 3.5 Local or Special Interest Services

There are many local or special purpose online services offered around the world which could be of interest to schools. These would need to be investigated at the local level. Australian examples are Infowest, created by the Department of Computing and Information Technology in Perth as a local tourist and general information service; and Westir, from the Western Sydney Clearinghouse, which provides access to a database of material related to the region, on topics such as housing, health, education, employment, local government, and industry. Several of the major Australian state capital city newspapers have made their files available online locally, or are preparing to do so, with school users being encouraged. Examples include PressCom, the online news service of South Australia's Adelaide Advertiser, and QNIS, the Queensland Newspapers Information Service.

### 3.6 Electronic Bulletin Boards and Electronic Mail

Many thousands of electronic bulletin boards around the world allow users/members to exchange information and to contact each other via electronic mail. They may be run by professional associations, clubs and societies, hardware or software users' groups, computer shops, computer magazines, government departments, education authorities, or interested individuals. Again, some Australian examples will give an idea of what

is available. In Victoria, the officers of the Ministry of Education run several electronic bulletin boards for teachers and educational administrators. These inlcude LIB-LINK for teacher librarians, SCI-NET for science teachers, and SCEC-NET for computer teachers. In South Australia, the state Department of Education's Angle Park Computing Centre has set up NEXUS, which provides a bulletin board, electronic mail, access to a file of the Australian Associated Press (AAP) news service, and facilities for downloading software. Other organisations which run electronic bulletin boards of educational interest include libraries (for example, Redcliffe City Library in Brisbane) and individual schools (for example, Templestowe Technical School in Melbourne and Sydney Church of England Grammar School).

## 4. INFORMATION SKILLS

It is through information skills programmes that students acquire the skills, attitudes, and knowledge necessary for effectively using the sources of information they have available to them, including online information services. What are information skills? They are part of the processes concerned with meaning, understanding, knowing, doing, thinking, imagining, expressing, and communicating. They are a component of self-directed learning, in which students make their own choices and take responsibility for their own learning. Lifelong learning, so essential for the management of personal, social, and technological change, also draws on information skills. Information skills are broadly based and are embedded in the educational programmes of schools. Their effective development depends not only on students' access to a wide range of information resources and tools selected by teachers and teacher librarians. They require students to develop skills in defining an information task, locating, selecting, processing, and using information to complete that task, and evaluating the results.

Online information services can be used by students and teachers in across-the-curriculum information skills programmes, in specific curriculum areas, and in professional development programmes for teachers. For information skills programmes, online information services are another resource and tool which students can use. Teachers and teacher librarians can negotiate which databases or services are appropriate in class programmes, then review the information skills, knowledge, and attitudes which students need to develop or practise in order to access particular databases and then to use the information retrieved from those databases. The President of DIALOG, Roger Summit, has called for more emphasis on information retrieval in our educational programmes, arguing that students are encouraged to think more precisely about formulating their search plans when accessing information online. (3)

## 5. USE OF ONLINE INFORMATION SERVICES IN SCHOOLS

Recent reports and documents from Australia and overseas indicate that more and more schools are making use of online information services. In the United States, relevant documents have included Research Goes to School II: How to Go Online to the Information Databases (4) from the KNOW-NET Dissemination Project

in Washington State, and Pennsylvania Online: A Curriculum Guide for School Library Media Centers (1986) from the State Library of Pennsylvania. (5) The former describes the online information services available and gives directions on using them in the school; the latter focusses on the skills needed to use them effectively.

In England, the Prestel Education Curriculum Development Project under Judith Askey is investigating the potential use of videotex in education, and providing schools with a range of pamphlets and other aids to assist them in using the services. (6, 7) The Microelectronics Support Unit has been established in the United Kingdom to provide an information service about the application of information technology in schools and much of that information will be available online eventually. Some individual schools, too, have done some important work in this field. The involvement of Houghton Regis Upper School and others in work with Prestel Education has resulted in articles in journals such as Educational Computing and the Times Educational Supplement; while Nigel Akers, Librarian at Holgate School, Nottingham, has been a proponent of the use of services like Prestel with students as a means of developing information skills. His microcomputer-based information skills package, The Schmidt File, incorporates work with a videotex simulation. (8)

In Australia, a committee established by the School Libraries Section (WA Group) of the Library Association of Australia produced a major report in mid-1987, Online Information Services for Schools: Implications for School Libraries. (9) This report provides an educational rationale for the use of online information services in schools, gives an overview of services available, and suggests curriculum applications. Among other relevant documents (albeit much smaller and with a more limited scope) are a short report from the New South Wales Department of Education's Computer Unit on some computer-based services including electronic mail; a discussion paper from the Western Australian Department of Education's Schools Computing unit on Viatel in Education; and two issues of Gateway, a publication of the Queensland Department of Education's Library and Resource Services, on Viatel and QNIS. Other Australian reports and documents which have emerged in the last three years or so on information skills have provided a pedagogical foundation for the application of information technology in schools. (10)

At recent Australian conferences, too, school use of online information services has been discussed. At each of the three "information online" national conferences in Sydney (1986, 1987, and 1988), organised by the Information Science Section of the Library Association of Australia, at least two speakers have paid some attention to this topic. A full morning of the Third National Conference on School Library Automation in Adelaide in September 1986 was devoted to the educational use of online information services. At the Australian School Library Association Biennial Conference in Hobart in September 1987, several speakers focussed on some of the range of online information services in use in schools and relevant to the educational needs of students and teachers (see, for instance, 11). At the national Australian Computers in Education conference in September 1987 in Adelaide, no fewer than twelve sessions were devoted to issues relating to online information in schools. (12) All of this would indicate that educators are showing increasing interest in the use of these information sources, and that their use in schools is growing.

## 6. CURRENT RESEARCH

While the past couple of years have been characterised by the growth in school use of online electronic information services, this growth has not been documented or quantified in any consistent manner, and it is difficult to ascertain the specific uses being made of the systems in schools and indeed the specific users of these systems. Most of our knowledge of the specifics of school use has come from articles or conference presentations by individual teachers or teacher librarians on how they are using a system in their schools - for example, American articles by Elyse Fiebert on the use of DIALOG at Radnor High School in Pennsylvania (13, 14); articles by Judith Askey in the United Kingdom on the use of Prestel; and conference papers by Frank James (15) and Sandra Naude (11) in Australia on the use of a range of services at Sacred Heart College Senior School in South Australia and St Hilda's Anglican School for Girls in Perth, Western Australia. There have also been reports (usually unpublished) from individual schools on their use of online information services - particularly where they were given funding for trial projects. Examples are a report by B.W. Graham on Viatel at Tweed River High School Library (16) and a report by Sandra Naude on Viatel at St Hilda's.

However, in 1986/1987, two major research projects were under way in the United States. In California, Ann Lathrop was doing a "survey of online searching usage in school libraries" (1986), while in the east Jacqueline C. Mancall and Elizabeth Smith Aversa were doing a questionnaire survey of online information services in schools in the United States. (17) The latter was described in an article, "Online Users in Schools: A Status Report", in the May 1987 issue of Online. In England, the Microelectronics Education Support Unit has been "awarded a BLRDD grant to investigate the applications and educational value of online information systems in schools".

In Australia in 1986, the Australian Libraries and Information Council (ALIC) funded a national study of "school use of networks and information retrieval systems". It was hoped that this project, carried out by a firm of consultants, would provide data on the use of a wide range of information systems and services in Australian schools, including such services as ASCIS (the Australian Schools Catalogue Information Service) and Telecom Australia's Viatel, among others. However, the results were very disappointing, in that only six schools were involved in the major part of the study, and no new information emerged as a result of it. The report of the study has not been published.

## 7. A SMALL-SCALE AUSTRALIAN RESEARCH PROJECT

So that online information systems can better meet the information and management needs of schools, it is important that system developers are aware of the information needs of the school community and the current applications of their product in schools. Equally important, schools need to be aware of the potential uses of systems and be able to articulate those needs to system developers. In addition, many staff at schools not currently using online information services, or which are just venturing into the field, are looking for information on how those systems are being used elsewhere, and what applications have proved the most effective in particular settings.

In the light of the above reports of research from overseas, and of our own observations overseas, Joyce Kirk and I felt that an Australian study could produce very useful information. Because of the lack of accessible previous research studies in this field, we decided to begin with a small-scale preliminary survey to obtain some data quickly, and to test the feasibility of a larger and more representative school survey. Our assumption was that, should such a survey be proved feasible, the data collected in the small-scale survey would be used to construct an appropriate survey instrument. The preliminary survey represented an attempt to ascertain the extent of school use of online information systems, including remote databases and electronic mail; the services which are being used; the purposes for which they are being used; and the nature of that use. It was not intended to be evaluative, either of the information systems themselves, or of the use made by schools of those systems.

For this preliminary survey, a questionnaire form was developed, based on the aims outlined above, after a process of discussion and trialling. The form had two parts. The first asked questions about the equipment schools were using to go online, the services that were used most, perceptions of the value of online services to the school, who did the searching, how the searchers gained their skills, where the equipment was kept, and the administrative arrangements that had been necessary. The second part comprised a set of questions on a single page; respondents were asked to complete one of these pages for each database or service (not host) that they were using. Information was requested about the way in which each service was used, the curriculum areas for which it was used, and any perceived limitations in terms of the school's needs. Because the questionnaire was open-ended, it was decided to mail the forms to only fifty schools, so that problems of data analysis could be kept within manageable bounds while still ensuring a reasonable picture of school use of online services. Eventually, forms were sent to fifty-one schools, in late November 1987.

Only schools known to be using online information services were included in the survey. Sources used to identify appropriate schools included articles from newspapers and journals in the fields of education, school librarianship, and educational computing; lists of school users on online systems such as Viatel and LIB-LINK; contacts made at conferences and seminars; and visits to school libraries. An attempt was made to include schools in all states and territories, though ultimately no schools in the Australian Capital Territory and the Northern Territory were part of the study. An attempt was also made to include large and small schools, primary and secondary, state and independent, from country and remote areas as well as in the cities. Table 1 shows location of responding schools, indicating a balance between state and independent schools. The response rate of 54.9 percent was probably related to the fact that the questionnaires were mailed close to the end of the school year. We were very surprised to receive eight responses which indicated that online services were not in use in those schools. However, three of these responses were again checked with records which showed that the schools were, in fact, registered as users of at least one system. This suggested to us that communication within schools about online use is not as good as it might be, with some members of staff being unaware of what others are doing.

Most responding schools were using more than one online service; many were using several. One school used five services; five schools used four services; eight schools used three services; three schools used two services, and three schools used only one service. Table 2 shows the online services which schools were using. The most used online information service was Telecom Australia's public videotex service, Viatel. The format of the table hides the next most popular type of service, the full-text newspaper service. Four South Australian respondents were using PressCom (the Adelaide Advertiser online service), three Queensland schools were using QNIS (the Queensland Newspapers online service, incorporating the Brisbane Courier Mail), and three South Australian schools were using the Education Department's NEXUS electronic bulletin board system which has a version of the Australian Associated Press (AAP) service available. This means that ten respondents were using a major online newspaper database. General information services like Viatel and the newspapers, therefore, were the most popular services with schools. It is probably no coincidence that these are among the cheapest to use. These were followed by the Keylink electronic mail and communication service (often used for such classroom applications as process writing and electronic penfriend schemes), ASCIS (used for cataloguing and selection information for the school library), then the Elderlink rural videotex service (usually used by country schools and agricultural high schools), and the CTC (Computer Telecommunications Corporation) schools database service, which incorporates the ERIC database and online reference works such as the Academic American Encyclopedia and the Macquarie Dictionary.

Schools were also asked to list those online services which they were not using, but which they would like to use. Once again, the general information services were the most popular. The online newspaper services (AAP, QNIS, PressCom, and the WA Newspapers database) together were nominated by ten schools. The major database utilities, DIALOG and AUSINET, were each nominated by two schools, but individual databases on these services (such as Australian Education Index and ERIC) were also nominated. Some respondents noted that while they would like to use services on hosts like AUSINET, the current cost structure was prohibitive. Several other services were each nominated by only one school. However, replies to other questions indicate a general lack of knowledge of the services available. For instance, one respondent commented twice on the lack of education-oriented online information services - despite ERIC, SPIF/SPIN, Australian Education Index, ACIN, and numerous other more specialised education services, of all of which he/she seemed unaware.

In eleven schools, students learned online information search skills. In seven, this took place in the school library; in six it took place in the Computer Room; and in one it took place in another room (a specific-purpose teaching room for special education activities). Obviously, in two schools, these skills were taught in more than one location. In eight schools, there was no formal learning of online information search skills. It would be a great pity if, as these responses appear to indicate, online information skills are being taught wholly outside the school library in many cases, in view of the perceived function of the school library in information provision and in the development of information skills.

Schools in their responses indicated that they saw the major benefits of online services being related to better or faster access to information, or access to more current information, than is possible with manual sources. Other benefits were seen to be contact with other schools and other pupils via electronic bulletin boards, access to library cataloguing information, removal of pressure on existing resources, and access to a resource to teach students about technology. Only three respondents referred to the value of online information services in information skills development. If these services are, in fact, valued as sources of up-to-date, readily-accessible information, then it should follow that the skills needed to use them effectively would be important.

Respondents were asked about the problems associated with using online information services in the school. It was not totally unexpected that the cost factor was cited by most. Another barrier was access to the equipment within the school. Our own perception, based on responses to other questions, is that lack of knowledge of the options and of online search skills were major barriers. Given that all schools included were those where some online services are being used, and where there was some commitment to the use of online information, this was very worrying. It is clear that school administrators, classroom teachers, teacher librarians, and parent groups, all need more information about what is available, the likely cost, and appropriate educational applications.

At the time of preparing this IFLA Conference paper, analysis of the questionnaire responses is continuing, and a further report will form part of the conference presentation.

## 8. CONCLUSION

While current reports and other documents from the United States of America, the United Kingdom, and Australia clearly indicate that online information services have the potential to play an important part in education, as a source of up-to-date information for teachers, students, and school administrators, and a resource for teaching information skills, little work is available on the actual uses and value of these services in schools. Our small-scale preliminary Australian study highlights some of the limitations of current school practice and some barriers to effective use of these services - though a larger research project would be needed to confirm these and to give a more comprehensive picture of the current scene. More information is needed on the ways in which the online services are being used in schools at present, including evaluative information. Above all, teachers and teacher librarians need to be more informed about the options available, while system developers would benefit from information about school needs.

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TABLE 1: LOCATION OF RESPONDING SCHOOLS

| STATE/ TERRITORY | SCHOOLS | |
|---|---|---|
| | STATE | INDEPENDENT |
| Australian Capital Territory | 3 | 3 |
| New South Wales | | |
| Northern Territory | 4 | 3 |
| Queensland | 3 | 2 |
| South Australia | | |
| Tasmania | | |
| Victoria | 1 | 1 |
| Western Australia | 6 | 2 |
| Non-Users | | |
| TOTAL | 17 | 11 |

n = 28

TABLE 2: ONLINE SERVICES USED

| NAME OF SERVICE | NUMBER OF USERS |
|---|---|
| Viatel | 13 |
| Keylink | 8 |
| ASCIS | 7 |
| Elderlink | 5 |
| CTC | 5 |
| PressCom | 4 |
| NEXUS | 3 |
| ACIN/NCIN | 3 |
| QNIS | 3 |
| ORBIT | 1 |
| CLANN | 1 |
| TASNET | 1 |
| Inhouse BBS | 1 |

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